DUP.

PSYCHE

A JOURNAL OF ENTOMOLOGY

ESTABLISHED IN 1874

VOL. XXXVIII JUNE-SEPTEMBER, 1931 Nos. 2-3

TABLE OF CONTENTS

Ants Collected on Cape Cod, Massachusetts. *A. H. Sturtevant*.. 73

Concerning Some Ant Gynandromorphs. *W. M. Wheeler*..... 80

The Ant *Camponotus* (*Myrmepomis*) *sericeiventris* Guérin and its Mimic. *W. M. Wheeler*..... 86

A New Ant-Like Cerambycid Beetle from Honduras. *W. S. Fisher* 99

Notes on North American Anyphæninæ in the Museum of Comparative Zoology. *Elizabeth B. Bryant*..... 102

Book Notice..... 127

CAMBRIDGE ENTOMOLOGICAL CLUB

OFFICERS FOR 1931

President . . . . . C. A. FROST
Vice-President . . . . . C. W. COLLINS
Secretary . . . . . P. J. DARLINGTON, JR.
Treasurer . . . . . F. H. WALKER
Executive Committee . . . F. M. CARPENTER; A. P. MORSE; D. W. FARQUHAR

EDITORIAL BOARD OF PSYCHE

EDITOR-IN-CHIEF

C. T. BRUES, HARVARD UNIVERSITY

ASSOCIATE EDITOR

F. M. CARPENTER

CONSULTING EDITORS

C. W. JOHNSON, Boston Society of Natural History.
NATHAN BANKS, Harvard University.
A. L. MELANDER, College of the City of New York.
A. P. MORSE, Peabody Museum, Salem, Mass.
Thomas Barbour, Cambridge, Mass.
J. G. NEEDHAM, Cornell University.
W. M. WHEELER, Harvard University.

PSYCHE is published quarterly, the issues appearing in March, June, September, and December. Subscription price, per year, payable in advance: $2.00 to Subscribers in the United States; foreign postage, 25 cents extra, Canada 15 cents. Single copies, 65 cents.

Cheques and remittances should be addressed to Treasurer, Cambridge Entomological Club, Museum of Comparative Zoology, Cambridge, Mass.

Orders for back volumes, missing numbers, notices of change of address, etc., should be sent to F. M. Carpenter, Museum of Comparative Zoology, Cambridge, Mass.

IMPORTANT NOTICE TO CONTRIBUTORS

Manuscripts intended for publication, books intended for review, and other editorial matter, should be addressed to Professor C. T. Brues, Museum of Comparative Zoology, Cambridge, Mass.

Authors contributing articles over 8 printed pages in length will be required to bear a part of the extra expense, for additional pages. This expense will be that of typesetting only, which is about $2.00 per page. The actual cost of preparing cuts for all illustrations must be borne by contributors; the expense for full page plates from line drawings is approximately $5.00 each, and for full page half-tones, $7.50 each; smaller sizes in proportion.

AUTHOR'S SEPARATES

Reprints of articles may be secured by authors, if they are ordered before, or at the time proofs are received for corrections. The cost of these will be furnished by the Editor on application.

Entered as second-class mail matter at the Post Office at Boston, Mass. Acceptance for mailing at special rate of postage provided in Section 1103, Act of October 3, 1917, authorized on June 29, 1918.

PSYCHE

VOL. XXXVIII JUNE - SEPTEMBER, 1931 Nos. 2 - 3

ANTS COLLECTED ON CAPE COD, MASSACHUSETTS

By A. H. Sturtevant

California Institute of Technology, Pasadena, California

The list below represents the results of collections made each summer from 1925 to 1930 inclusive. Ants have been recorded from Cape Cod by Wheeler (1906, 1910, 1913); these records have not been reproduced in the present list except where they represent localities or forms not included in my own collections.

All available records are included, even for the commoner ants, with the result that a rough estimate of the frequency of a species on the Cape may be made by noting the number of localities from which it has been taken. The dates given represent the extremes between which winged queens or males have been collected. Dates in parentheses are from neighboring portions of eastern Massachusetts when these extend the limits found for Cape Cod.

The list as given cannot be supposed to represent the entire fauna of the region. Three forms in particular were expected and carefully searched for, without success—*Lasius aphidicola, L. interjectus,* and *Camponotus caryæ.* They are certainly either absent or much less common than in neighboring portions of the mainland. Other forms that may be expected are *Pheidole pilifera* (recorded by Wheeler from Naushon) and *Tetramorium cespitum* (which I have taken at Rochester, only a few miles from the Cape).

Cape Cod apparently represents the northern limit, or very nearly so, for the range of several ants: *Monomorium minimum, Aphaenogaster treatæ, Leptothorax davisi, Pren-*

olepis parvula, and *Formica difficilis. Lasius neoniger, Formica argentea, F. subænescens,* and *Camponotus noveboracensis* here approach their southern limits at low elevations in the eastern states.

This list may be compared profitably with Wheeler's lists for New England (1906), Nantucket (1928a), and Penikese (1926), and with Davis and Bequaert's list for Long Island and Staten Island (1922).

1. *Stigmatomma pallipes* Haldeman. East Falmouth Waquoit, Mashpee. (Naushon, August 31). This species is usually found in the beech-holly association that occurs sporadically in eastern Massachusetts.

2. *Ponera coarctata pennsylvanica* Buckley. East Falmouth, Brewster. Woods Hole (Wheeler 1906). Much less common than in the New York region.

3. *Monomorium minimum* Buckley. Woods Hole, Waquoit, Pocasset, South Yarmouth, North Eastham, South Wellfleet, Truro. July 15 (mating flight). Common in sand; also nests on the mounds of Formica exsectoides. I have found it only in the latter situation in northern New Jersey.

4. *Solenopsis molesta* Say. Woods Hole, West Falmouth, Sandwich.

5. *Crematogaster lineolata* Say. Woods Hole, Falmouth, East Falmouth, Pocasset, Sandwich, Hyannis, South Harwich, South Chatham, Brewster, South Orleans, Truro. July 24-August 29 (Rochester, July 22).

6. *Myrmecina graminicola americana brevispinosa* Emery. Woods Hole. Two specimens, under fallen leaves.

7. *Aphaenogaster treatæ* Forel. Woods Hole, Brewster. Darker colored than specimens from Mississippi.

8. *A. fulva aquia* Buckley. Woods Hole, East Falmouth, Waquoit, Pocasset. August 6-18.

9. *A. fulva aquia picea* Emery. Woods Hole, East Falmouth, Waquoit, Brewster, Provincetown. July 15-September 8.

10. *Myrmica punctiventris* Roger. Woods Hole, East Falmouth, Waquoit, Mashpee. September 7-13. (Fairhaven, August 13). Mating flight, September 13. Common in old nuts and galls and under fallen leaves.

11. *M. lævinodis bruesi* Wheeler. Woods Hole. July 29-August 28. This form was described from specimens taken in the woods adjoining the Fay Rose Gardens. It is now the dominant ant in these woods, but I have been unable to find a single specimen in any other place. The numerous nests seem to represent branches of a single family, since transfers of workers never lead to fighting—in spite of the fact that the species is very pugnacious and has the most painful sting of any ant I have encountered in the northeastern states.

12. *M. scabrinodis sabuleti* Meinert. Woods Hole, Falmouth, Falmouth Heights, East Falmouth, Pocasset, Truro. August 14-September 6.

13. *M. scabrinodis schencki emeryana* Forel. Woods Hole, Sandwich, South Harwich, Chatham.

14. *Harpagoxenus americanus* Emery. Woods Hole, West Falmouth, Sandwich. July 12-August 14. Sexual pupæ still present August 14. Found with Leptothorax curvispinosus and with L. longispinosus. I have taken this at three other unrecorded localities—Mendham, New Jersey; Cold Spring Harbor, Long Island, New York; Fairhaven, Massachusetts.

15. *Leptothorax longispinosus* Roger. Woods Hole, East Falmouth, Sandwich, Mashpee.

16. *L. curvispinosus* Mayr. Woods Hole, Falmouth, West Falmouth, Waquoit, Mashpee, Provincetown. August 1-7. Sexual pupæ present, July 4-August 7. Common in old acorns, nuts and hollow twigs.

17. *L. curvispinosus ambiguus* Emery. Woods Hole, Falmouth.

18. *L. texanus davisi* Wheeler. South Wellfleet. One nest, in white sand.

19. *Dolichoderus plagiatus* Mayr. Waquoit.

20. *D. plagiatus inornatus* Wheeler. Chatham.

21. *Tapinoma sessile* Say. Woods Hole, Falmouth, East Falmouth, Pocasset, Sandwich, Cotuit.

22. *Brachymyrmex heeri depilis* Emery. Woods Hole, South Orleans. August 22-23.

23. *Prenolepis imparis* Say. Woods Hole, Falmouth, East Falmouth, Waquoit. August 17. This form is apparently common, but is not easily found in mid-summer—as is also true in the New York region.

24. *P. parvula* Mayr. East Falmouth, Pocasset, South Wellfleet. August 29. This species is easily overlooked and may be commoner than is indicated.

25. *Lasius niger neoniger* Emery. Woods Hole, Falmouth, Falmouth Heights, Chatham, Truro. July 24-September 3. This form is not clearly distinct from americanus in this region. I have identified all the intermediates as americanus; I am inclined to suspect that the extreme hairy specimens listed here are not really distinct from the paler form of americanus referred to below.

26. *L. niger alienus americanus* Emery. Woods Hole, Falmouth, Falmouth Heights, West Falmouth, East Falmouth, Pocasset, Sandwich, Hyannis, South Yarmouth, South Chatham, Chatham, Brewster, North Eastham, South Wellfleet. July 11-September 30. There appear to be two distinct forms here—a darker form typically nesting in stumps and logs in the woods, not found infested with Mermithids; and a paler form typically nesting in the soil in sunny places (often on the beaches down to high-tide level), frequently producing short-winged mermithogynes (see Wheeler 1928). In the absence of adequate series from the Palæarctic region and from the western states, I am unable to make a thorough revision of the forms of niger—without which it seems to me undesirable to describe and name these types.

27. *L. brevicornis* Emery. Woods Hole, West Falmouth. August 19-September 30. I have once found mermithogynes in this species (see Wheeler 1928).

28. *L. flavus nearcticus* Wheeler. Woods Hole, Waquoit, Sandwich, Cotuit. August 13-September 8.

29. *L. latipes* Walsh. Woods Hole, Falmouth, Mashpee. Hyannisport (Wheeler). August 12-September 8. (Rochester, July 22.) Both the A and the B type of females occur on Cape Cod.

30. *L. claviger* Roger. Woods Hole, Falmouth Heights, Pocasset, Mashpee, South Chatham, Chatham. August 22-26.

31. *Formica sanguinea rubicunda* Emery. Cotuit. Woods Hole (Wheeler). (Rochester, July 22.) The only nest I have found on Cape Cod had F. subænescens slaves.

32. *F. sanguinea subintegra* Emery. Woods Hole, West Falmouth, Waquoit, Mashpee. August 17-19. I have observed raids on August 6, and (on Naushon) August 25. Two colonies moving to new nest-sites were observed, August 12 and 15. All the slaves observed on Cape Cod have been *F. subsericea.*

33. *F. exsectoides* Forel. Woods Hole, Falmouth, East Falmouth, Waquoit, Mashpee, Chatham. August 22.

34. *F. difficilis* Emery. Hyannis.

35. *F. difficilis consocians* Wheeler. West Falmouth. Woods Hole (Wheeler). July 18. The one nest that I have found on Cape Cod contained numerous larvæ of Microdon.

36. *F. truncicola integra* Nylander. East Falmouth, Mashpee, South Harwich. August 6.

37. *F. truncicola obscuriventris* Mayr. Woods Hole, Pocasset. August 2. (Fairhaven, May 28.)

38. *F. fusca argentea* Wheeler. Woods Hole, Falmouth, Falmouth Heights, West Falmouth, Sandwich, Chatham,

Truro. Cotuit (Wheeler). July 24. This form is common on the beaches and sand-dunes. I have taken it at Guilford, Connecticut, but it has not been found on Long Island.

39. *F. fusca subænescens* Emery. Mashpee, Cotuit. (Fairhaven, August 13.)

40. *F. fusca subsericea* Say. Woods Hole, Falmouth, West Falmouth, East Falmouth, Waquoit, Pocasset, Mashpee. July 15-August 20. (Naushon, August 31.)

41. *F. neogagates* Emery. Woods Hole, Sandwich, Mashpee, Truro. (Rehoboth, August 18.) The specimens from Sandwich were in a nest that also contained the following form, and that was situated on the edge of a sand-dune. This species typically forms small colonies under stones in woods.

42. *F. neogagates lasioides vetula* Wheeler. Falmouth Heights, Pocasset, Sandwich, South Wellfleet. Woods Hole (Wheeler). This form nests on the edges of sand-dunes or salt-marshes.

43. *F. pallidefulva schaufussi* Mayr. Woods Hole, Falmouth.

44. *F. pallidefulva schaufussi incerta* Emery. Woods Hole, Falmouth, East Falmouth, West Falmouth, Waquoit, Pocasset, Sandwich, South Yarmouth, Chatham, South Wellfleet, Truro. July 15-18. (Rochester, July 22.)

45. *F. pallidefulva nitidiventris* Emery. Woods Hole, Falmouth, West Falmouth, East Falmouth.

46. *F. pallidefulva nitidiventris fuscata* Emery. Mashpee. Woods Hole (Wheeler).

47. *Polyergus lucidus* Mayr. Falmouth, West Falmouth. The slaves in both nests were F. incerta.

48. *Camponotus castaneus* Latreille. West Falmouth. August 7.

49. *C. castaneus americanus* Mayr. Woods Hole, Waquoit, Mashpee. August 14.

50. *C. herculeanus pennsylvanicus* Degeer. Woods Hole, Sandwich, Mashpee, North Eastham. August 16-27. (Naushon, August 30.)

51. *C. herculeanus pennsylvanicus mahican* Wheeler. Woods Hole (Wheeler). I have been unable to find this form.

52. *C. herculeanus pennsylvanicus ferrugineus* Fabricius. Woods Hole. One queen and two workers, taken separately.

53. *C. herculeanus ligniperda noveboracensis* Fitch. Woods Hole, Waquoit, Mashpee, Hyannis, Chatham. July 4. Common in logs about sandy ponds, where it replaces pennsylvanicus. At Woods Hole it is much less common than pennsylvanicus; on Naushon pennsylvanicus is still more frequent, but I have not found *noveboracensis*.

Literature Cited

Davis, W. T., and J. Bequaert.
1922. An annotated list of the ants of Staten Island and Long Island, N. Y. Bull. Brooklyn Ent. Soc. 17: 1-24.

Wheeler, W. M.
1906. Fauna of New England. 7. List of the Formicidæ. Occas. Papers Boston Soc. Nat. Hist. 7: 1-24.
1910. The North American Ants of the genus Camponotus Mayr. Ann. N. Y. Acad. Sci. 20: 295-354.
1913. A revision of the ants of the genus Formica (Linné) Mayr. Bull. Mus. Comp. Zool. 53: 377-565.
1926. (Formicidæ in: Coker, R. E., Fauna of Penikese Island, 1923). Biol. Bull. 50: 35.
1928. Mermis parasitism and intercastes among ants. Jour. Exper. Zool. 50: 165-237.
1928a. Ants of Nantucket Island, Mass. Psyche 35: 10-11.

CONCERNING SOME ANT GYNANDROMORPHS

By William Morton Wheeler

I. *Dinergatandromorphs*

In the twenty-sixth volume of Psyche (1919) I described and figured a peculiar gynandromorph of *Camponotus* (*Colobopsis*) *albocinctus* Ashmead from the Philippines and designated it as a "dinergatandromorph" because the left half of its head was that of a male. This individual, therefore, was unlike all previously described ant gynandromorphs, which are combinations either of male and female or of male and worker components. The correctness of my interpretation was doubted by Santschi (1920) and Emery (1924). The latter conjectured that what I had taken to be the soldier half of the head was really a generalized female-worker component, but I gave reasons (1928) for adhering to my original interpretation. Additional considerations might be adduced, but this is no longer necessary, because Vandel (1931) has just published a very careful account of a dinergatandromorph of *Pheidole pallidula,* in which the union of soldier (right-sided) with male (left-sided) characters in the head is even more extraordinary than in my specimen of *Camponotus albocinctus.* The more striking character of Vandel's specimen is due, of course, to the much greater differentiation in the shape of the head of the normal soldier, worker and female castes of Pheidole. The body and right side of the head in the specimen are very clearly those of a soldier, and as in the Camponotus, there is no median ocellus, which should be present if that region of the head were female. The bearing of the two cases on the opposed blastogenic and trophogenic hypotheses of the origin of castes in ants, is obvious. The anomalies under discussion must have arisen

either in the egg or during the larval stage. On the former supposition, the soldier like the male component would be blastogenic and the anomaly would be due to unusual nuclear (chromosomal) or other conditions in the unsegmented or just segmented egg; according to the blastogenic hypothesis, the soldier component would be due either to special feeding of the undifferentiated female portion of a germinally determined gynandromorphous organism, or to some shock or other injury to certain tissue areas of the larval or prepupal soma, as in the butterfly gynandromorphs produced by van Someren.

II. *Anteroposterior Gynandromorphs*

Vandel, while discussing the various hypotheses that have been framed by Boveri, Morgan, Doncaster, myself and others to account for gynandromorphs, calls attention to certain ambiguous cases which may be interpreted either as functional ergatomorphic males or as anteroposterior gynandromorphs, that is, as pathological individuals having the anterior part of the body of the worker type and the gaster and genitalia male. The following are cases of this description:—

(1) Santschi (1921) described three specimens of *Cataglyphis albicans* Rogers, taken by Théry in a single locality in Morocco, as having the head and thorax of the worker type, but the gaster and well-developed genitalia male. The head, however, was small and furnished with male ocelli. Santschi was unable to decide whether these specimens were gynandromorphs or normal ergatomorphic males of their species. The fact that some species of Cataglyphis have no marriage flight and have males with rather short wings and that there were three of the peculiar specimens seemed to indicate that they were ergatomorphic males. The number of individuals is not important in this connection since in two other cases recorded in the sequel three undoubted gynandromorphs were taken from the same nest.

(2) Mayr, in 1868, described a peculiar hermaphrodite ("Zwitter") specimen of *Iridomyrmex constrictus* Mayr,

a fossil ant from the Baltic amber. I reëxamined and figured this insect in 1914. It has a typically worker head and thorax and a normal male gaster with well-developed genitalia, but the eyes are large and the antennæ are 13-jointed and therefore male. The specimen, therefore, resembles Santschi's specimens of Cataglyphis even in having some male cephalic characters.

(3) Lomnicki (1914) found in the same colony three very similar specimens of *Myrmica rugulosa*, with the anterior part of the body as far back as the gaster predominantly female and the gaster male, but with poorly developed genitalia (small in one specimen, retracted and invisible in the others).

Lomnicki's specimens are evidently anteroposterior gynandromorphs, though they exhibit some admixture of maleness in the anterior portion of the body, and perhaps of femaleness in the reduced size of their male genitalia. The Cataglyphis and Iridomyrmex cases are also, I believe, anteroposterior intersexes or gynandromorphs which may, perhaps, have become the only males of their respective species. My reasons for this opinion, developed in my paper on intercastes (1928, p. 229 et seq.), are derived mainly from a consideration of the peculiar conditions in the genus Ponera. Some species of these ants (*P. ergatandria* Forel, *P. punctatissima* Roger, *P. mina* Wheeler) have males exactly like the workers, except for the genitalia, while one Mediterranean species, *P. eduardi* Forel, has, in addition to the usual winged male an ergatomorphic male with worker thorax and abdomen but with the head and genitalia male. The ergatomorphic male of *P. punctatissima* was originally described by Roger as *P. androgyna*. These ergatomorphic males are therefore transverse, or anteroposterior gynandromorphs which function as the regular males of the species. Additional support for this statement is furnished by three extraordinary specimens of *P. coarctata pennsylvanica* Buckley, which Professor Clarence H. Kennedy has generously sent me for examination and which he or Miss H. Sheldon will describe in detail. They were taken from a colony nesting in a white

oak log on a sand-dune on Point Pelee Island, Ontario, in Lake Erie, and are remarkably alike, having black heads of the male type, though the antennæ are 12-jointed, except in one specimen which has the left antenna 13-jointed. The thorax and abdomen in all of them is pale brownish-yellow, like the color of callow workers. In two the genitalia are purely female, with small though normally developed sting; in the other a similar sting is combined with male genitalia appendages! Since the only known males of *P. pennsylvanica* are of the usual winged type with the body black throughout, we must regard Professor Kennedy's specimens as anteroposterior gynandromorphs. The specimen with hermaphrodite external genitalia is obviously intermediate between such a form as the normal ergatomorphic male of *P. eduardi,* which has a head of the male type with 13-jointed antennæ, and the two other specimens with exclusively worker abdomen and developed sting. The suppression of the sting in the former specimen would convert it into an ergatomorphic male, and if its testes were sufficiently developed it would be essentially like the normal ergatomorphic male of *P. eduardi.*

III. *Additions to the List of Known Ant Gynandromorphs*

In 1929 Donisthorpe listed the known ant-gynandromorphs and gave their number as 49. Vandel has eliminated from this list Santschi's Cataglyphis as a doubtful case (Donisthorpe included only one of the three cases mentioned in Santschi's paper), and has added the two peculiar *Myrmica ruginodis* Nyl. gynandromorphs described by Emery in 1924 (overlooked by Donisthorpe) and his Pheidole dinergatandromorph, thus making the total number of known ant gynandroromphs 51. Donisthorpe, however, omitted a Cardiocondyla gynandromorph described by Swezey in 1926. I have examined this insect in the collection of the Hawaiian Sugar Planters' Experiment Station and have found it to belong to *C. wroughtoni* Forel var. *hawaiiensis* Forel, and not to *C. nuda minutior* Forel, as Swezey supposed. The specimen, which was taken in a compost heap in the garden of the Experiment Station at Honolulu, is a normal female, except that the left eye is decidedly larger and the left antenna of the male type

and 13-jointed. In the same collection I discovered a second very similar gynandromorph of the same variety, taken on a window pane in Honolulu. This individual, too, has a larger left eye but the left antenna, though decidedly of the male type, has only 12 joints. Probably the normal male of *C. minutior* has 13-jointed antennæ, but a specimen in the same collection was found to have both antennæ 12-jointed. Adding these two Cardiocondyla gynandromorphs and Professor Kennedy's three Ponera gynandromorphs, the list of these anomalies now totals 56, or if we regard Santschi's three specimens of Cataglyphis and Mayr's Iridomyrmex as anteroposterior gynandromorphs rather than ergatomorphic males, we have 60.

Literature

Donisthorpe, H. 1929, Gynandromorphism in Ants. Zool. Anzeig. p. 92-96.

Emery, C. 1924, Casi di anomalia e di parasitismo nelle formiche. Rendic. Accad. Sc. Ist. Bologna, pp. 82-89, 4 figs.

Lomnicki, J. 1924, On three gynandromorphs of the ant *Myrmica rugulosa* Nyl. (in Polish). Kosmos, Lwow. 49, pp. 817-830, 5 figs.

Mayr, G. 1868, Die Ameisen des baltischen Bernsteins, Beiträge zur Naturkunde Preussens, Physik. ökonom. Gesell. Königsberg, 1, 102 pp., 5 pls.

Roger, J. 1859, Beiträge zur Kenntniss der Ameisenfauna der Mittelmeerländer, Berlin. Ent. Zeitschr 3, pp. 225-259, 1 pl.

Santschi, F. 1920, Cinq nouvelles notes sur les fourmis. 4. La 39e fourmi hermaphrodite. Bull. Soc. Vaud. Sc. Nat. 53, pp. 175-178.

Santschi, F. 1921, Formicides nouveaux de l'Afrique du Nord. Bull. Soc. d'Hist. Nat. Afr. Nord. 12, pp. 68-77.

Swezey, H. O. 1926, Gynandromorph Ant. Proc. Hawaii. Ent. Soc. 6, p. 229.

Vandel, A. 1931, Etude d'un gynandromorphe (dinergatandromorphe) de *Pheidole pallidula* Nyl. Bull. Biol. France Belg. 65, pp. 114-129, 2 figs.

Wheeler, W. M. 1914, The Ants of the Baltic Amber. Schrift. physik. ökonom. Gesell. Königsberg 55, 142 pp. 66 figs.

Wheeler, W. M. 1919, Two Gynandromorphic Ants. Psyche 26, pp. 1-8, 2 figs.

Wheeler, W. M. 1928 *a*, The Social Insects, Their Origin and Evolution. London, Kegan Paul.

Wheeler, W. M. 1928 *b*, Mermis Parasitism and Intercastes Among Ants. Journ. Exper. Zool. 50, pp. 165-237, 17 figs.

THE ANT *CAMPONOTUS* (*MYRMEPOMIS*) *SERICEIVENTRIS* GUÉRIN AND ITS MIMIC

By William Morton Wheeler

Camponotus (*Myrmepomis*) *sericeiventris,* owing to its size, wide distribution and dense covering of silver or golden pubescence, is one of the handsomest and most conspicuous ants of the American tropics. It has not been carefully studied, however, though it was originally described a century ago[1] and has since been repeatedly noticed by myrmecologists. When some years ago the huge and unwieldy genus Camponotus was divided into subgenera, *sericeiventris,* together with several species from the Ethiopian and Malagasy Regions, was assigned by Forel to the subgenus Myrmepomis. Later I transferred all the species, except *sericeiventris,* to my subgenus Myrmopiromis, thus leaving Myrmepomis as a monotypic group. In 1907 Forel[2] distinguished a subspecies *rex,* and published some remarks on its distribution and that of the typical form. On recently revising all the specimens that have been accumulating for many years in my collection and in the Museum of Comparative Zöology, I find that there are several varieties of each of the two forms and that workers of both exhibit a peculiar polymorphism. There are not only major, media and minima phases, but a distinct maxima which has not been described. Its head is decidedly larger and somewhat differently shaped from that of the

[1] As *Formica sericeiventris* by Guérin-Méneville (in Duperry, Voyage de le Coquille. Zool. Vol. 2, 1830, p. 205). It was described and figured three years later by Perty (Delectus Anim. Articul. 12, 1833, p. 134) as *Formica cuneata.*

[2] Formiciden aus dem Naturhistorischen Museum in Hamburg. II Feil. Mitteil. Naturh. Museum Hamb. 26, 1907, p. 13.

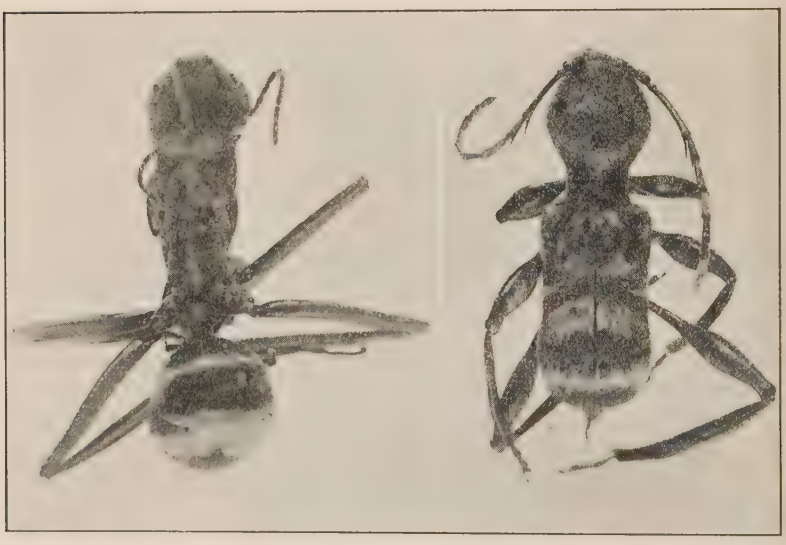
major and has shining sides. I have seen the females of some of the forms, but the male is still unknown.

The typical *sericeiventris*, originally described from Rio de Janeiro, is less widely distributed than has been supposed. It occurs in Brazil, Paraguay, Uruguay and portions of the Argentine, but I have seen no specimens from the Guianas or Venezuela. It is recorded also from Peru, Ecuador, Colombia and Mexico, but the specimens in my collection from these countries, like those from Panama and other Central American localities, have more brilliantly colored appressed pubescence and represent a distinct variety which I have called *satrapa*. I suspect that Forel has identified some of them as belonging to *rex*. The typical form of this beautiful subspecies occurs in Central America, especially Guatemala, but has varieties in Honduras and Mexico. All the records I have been able to find are cited under the descriptions of the various forms.

Colonies of *sericeiventris* and *rex* are fairly populous. They nest in decayed portions of standing tree-trunks some distance above the ground. I have found several such nests, usually in mango or Celtis trees, in Panama, Costa Rica and Guatemala. The workers are very aggressive and the maximæ are able to bite severely. The smaller workers are often seen ascending and descending the trunks of trees even in bright sunlight. Occasionally this ant is introduced into the United States on fruit boats. Mann found specimens of *sericeiventris* in a restaurant at Palo Alto, California, and I have received two specimens of *rex*, taken by Mr. F. M. Schott in New York City on a boat from Panama. In both cases the specimens probably arrived as stowaways in bunches of bananas.

Some years ago Dr. J. Bequaert gave me several peculiar Cerambycid beetles which he had taken June 4, 1924, on tree trunks at Prieta, Honduras, in company with workers of *C. sericeiventris rex* var. *semirex*. The beetles so closely resemble the ants that they may be regarded as highly mimetic. In an article in the present number of Psyche, Dr. W. S. Fisher has described the beetle as *Eplophorus velutinus* sp. nov., and I have inserted below a photograph made by Dr. F. M. Carpenter (Fig. 2). The beetle's body

is black, with short golden pubèscence on the posterior half of the prothorax and anterior half of the elytra. The latter are distinctly constricted in front of the middle, where they have on each side an oblique ivory yellow and a larger black fascia. The golden pubescence anterior to the constriction is sparse, like that on the prothorax, but the convex posterior portion is covèred with dense, longitudinal appressed pubescence of a brilliant golden hue. There is a



Figures 1 and 2. 1. *Camponotus sericeiventris rex* var. *semirex*. 2. *Eplophorus velutinus* Fisher.

pair of lateral, velvety black spots on the prothorax, and the tibiæ, especially the hind pair are peculiarly flattened as in the ant. The beetle's head and prothorax together represent the ant's head, with the pair of black spots simulating the eyes, and the elongated third joint of the antennæ the scapes; the anterior portion of the elytra resembles the ant's thorax and the posterior portion its gaster. The ivory and black fasciæ give the illusion of the pronounced constriction at the ant's petiole. As in other cases,

all this striking mimetic resemblance disappears under a high magnification like that of the photographs. (Figs. 1 and 2.)

The literature contains references to several other ant-mimicking Cerambycids. Belt,[1] who was one of the first to notice such forms, says that "amongst the longicorn beetles of Chontales, *Mallocera spinicollis, Neoclytus Oesopus* and *Diphyrama singularis* Bates, all closely resemble stinging ants when moving about on fallen logs." Bedel[2] in 1885 described a small longicorn as *Pseudomyrmeceon ramalium,* taken in Eastern Algeria on the twigs of *Quercus Mirbecki* D. R. in company with workers of Crematogaster, very probably *S. scutellaris* Oliv., which it closely resembles in size and coloration. Bedel remarks that the beetle's "form, coloration and gait give it, when alive, a singular resemblance to the ants of the genus Crematogaster, and since it is commonly found in their midst, it is easily confounded with them." Our North American fauna also contains a number of Cerambycids, notably species of Clytanthus, Euderces, Cyrtophora and Tillomorpha, which resemble ants in size, shape, coloration and behavior. The resemblance is very striking in two other forms, *Cyrtinus pygmæus* Haldem., which occurs on dead wood among small ants, such as *Lasius americanus* Emery, and the Carolinian *Michthysoma heterodoxum* Lec., which, in life, according to Beutenmüller, extraordinarily resembles small workers of the carpenter ant, *Camponotus pennsylvanicus* Deg.

The following table may serve in identifying the workers of the various subspecies and varieties of *C. sericeiventris:*

Appressed pubescence on body yellowish gray, or pale golden yellow, at the posterior borders of the gastric segments strongly converging to the mid-dorsal line; head of maxima worker longer than broad, its sides only feebly convex, slightly shining, rather densely and finely punctate; pronotal spines acute, longer than broad in all the worker forms

subsp. *sericeiventris* Guérin, 2

[1] The Naturalist in Nicaragua, London, 1874, p. 315.
[2] Ann. Soc. France, 1885, p. cxxxi.

Appressed pubescence longer, coarser and more golden, dull ochraceous or brownish, feebly or indistinctly convergent at the posterior borders of the gastric segments; head of maxima as broad as long, with more convex or swollen cheeks, its sides more extensively smooth and shining and only sparsely and superficially punctate; pronotal spines short and blunt even in the small workers ..... subsp. *rex* Forel, 5

2. Gaster and legs deep reddish ..... var. *holmgreni* var. nov.
Gaster and legs black 3

3. Head of maxima extensively deep red on sides, with rounded lateral borders, the posterior border very deeply excised and the posterior corners narrowed in the major worker; border of petiole much compressed and very sharp; pubescence golden ochraceous, rather sparse on head and thorax ..... var. *otoquensis* var. nov.
Sides of head of maxima worker black or only slightly reddish, feebly shining, less deeply excised behind 4

4. Appressed pubescence on body silvery, often with a slightly golden hue; border of petiole not produced upward in the middle ..... *sericeiventris* (typical)
Sides of head of maxima somewhat smoother and more shining; appressed pubescence on body more distinctly and more vividly golden; border of petiole usually produced in the middle as a small blunt tooth
var. *satrapa* var. nov.

5. Pubescence brilliantly and deeply golden, very dense on the thorax and posterior portion of the head, present even on the coxae and petiole .. subsp. *rex* (typical)
Pubescence less developed, except on the gaster 6

6. Pubescence dull ochraceous, dense on the pronotum but poorly developed on the sides of the thorax; sides of head of maxima worker red .....
..... var. *cualatensis* var. nov.
Pubescence on gaster more deeply and more vividly golden, more as in the typical *rex* 7

7. Pubescence on head, thorax and petiole bright golden yellow but much shorter than in typical *rex*
var. *semirex* var. nov.
Sides of thorax almost or quite devoid of pubescence....8

8. Pubescence dull, golden ochraceous present on vertex, pronotum and petiole..... var. *zacapensis* var. nov.
Pubescence absent on head, thorax and petiole, on gaster golden ochraceous.....var. *quiriguensis* var. nov.

Camponotus (Myrmepomis) sericeiventris Guérin

Worker maxima. Length 15-16.5 mm.; head 5-5.7 mm. long; 4.5-5.2 mm. wide; hind tibia 5.6 mm.

Head with rather straight sides, without swollen cheeks; subopaque except the sides and gular surface which are reddish and shining, but covered with minute punctures; antennal funiculi dark brown. Spines of pronotum rather sharp, longer than broad. Superior border of petiole sharp, entire and broadly rounded, angulate on the sides. Appressed pubescence not very abundant and not completely concealing the integument on the head, meso—and epinotum, petiole and sides of pronotum; denser on the gaster where it strongly converges at the posterior borders of the segments. Hairs rather long, black, often with white tips; posterior borders of gastric segments with whitish or yellowish hairs.

Workers major, media and minor. Length 7-13 mm.

Resembling the maxima, except in the smaller head and longer and more acute pronotal spines.

Female. Length 17-19 mm.; hind tibia 5 mm.; fore wing 17 mm.

Head smaller and narrower than in the worker maxima, with narrower posterior corners and less convex sides, nearly as broad in front as behind. Color and sculpture similar, but in some specimens the anterior half as well as the sides is red. Pronotal spines reduced to two small teeth.

Mesonotum and scutellum smooth and shining, often reddish, the former as broad as long. Epinotum with short, rounded base and long sloping declivity. Petiolar border notched in the middle, its angulate corners more pronounced and acuminate than in the workers. Pubescence and pilosity similar, short on head and thorax, absent on anterior portion of pronotum and on the scutellum. Wings distinctly brownish, with brown veins bordered with darker brown.

Brazil: Rio de Janeiro, type-locality (Thayer Exped.; J. C. Bradley; C. O. Lovén); Abuna, Rio Madeira (Mann and Baker); Sao Paulo (H. von Ihering); Island of Sao Sebastiao; Raiz da Serra; Jundiahy; Bauru and Piracicaba, in the state of Sao Paulo (H. Luederwaldt); Rio Negro, Amazonas (Ducke); Rio Doce, Espiritu Santo (M. Caullery); Sao Leopoldo (J. W. Stahl); Rio Grande do Sul (C. Lindman); Blumenau; Taquara, Santa Catharina (H. von Ihering).

Uruguay (*teste* Forel).

Paraguay: Encarnacion (J. C. Bradley); San Bernardino (Fiebrig); Aregua (Zürcher).

Argentina: Chaco, Corrientes and Misiones (C. Berg); Misiones (Mme. von Steiger).

Var. **satrapa** var. nov.

Worker maxima. Length 14-15 mm.; head 4.8 mm. long, 4.4 mm. wide; hind tibia 5 mm.

Very similar to the typical *sericeiventris* but somewhat smaller and with more brilliant, golden pubescence, longer and denser on the vertex, thorax and petiole; hairs blackish at base, with yellow tips. Sides of head blackish or dark brown, smoother and more shining, their punctures sparser. Border of petiole usually produced or subdentate in the middle.

Workers major, media and minor. Length 6-13 mm.

Very similar to the corresponding phases of the typical

sericeiventris but the pubescence is more golden, as in the maxima, and the petiolar border is usually more or less distinctly subdentate in the middle.

Female. Length about 16 mm.

Closely resembling the female of the typical *sericeiventris* but with entirely black head and thorax, the former more deeply excised behind and with much smoother and more shining sides, the petiolar border without a median notch and with less produced lateral corners. Wing membranes distinctly more deeply infuscated. Appressed pubescence more golden as in the worker *satrapa,* and the convergence of the pubescence on the second and third gastric segments even more pronounced than in the typical *sericeiventris.*

I have seen specimens of this form, which has been confused with the true *sericeiventris,* from nearly all the following localities:

Panama: Barro Colorado Island, type locality (Wheeler; N. Banks; P. Rau; W. C. Allee; P. Haskins); Rio Chenillo (Wheeler); David (C. Richter).

Colombia: (Lindig); (Tischbein; Forel); Antioquia (Nisser; Kraemer); Puerto de los Pobres, Antioquia (O. Fuhrmann).

Ecuador: Santo Domingo de los Colorados and between San Nicolas and Guanasilla (P. Rivet).

Peru: Santa Ana, 3,000 ft. (Yale Peruv. Exped.); Upper Pachitea (J. C. Bradley).

Brazil: Puerto America, Rio Putumayo (J. C. Bradley).

Costa Rica: (Tonduz); Port Limon (Wheeler; F. C. Paulmier); Turrucares (P. P. Calvert); Turrucares and Hamburg Farm (C. W. Dodge); Rio Raventazon, Santa Clara (P. Biolley); near San Jose (H. Schmidt).

Honduras: Ceiba, Lombardia; Carmelina, Progresso, Tela (W. M. Mann).

Var. **holmgreni** var. nov.

Worker major. Length 12 mm.

Very similar to the typical *sericeiventris,* but the funiculi, corners of the head, the gaster and legs are deep red.

The appressed pubescence is somewhat coarser and more yellowish and on the head and thorax somewhat longer than in the typical form of the species.

Worker minor. Length about 8 mm.

Colored like the worker major but the red coloration is more extensive, involving also the scapes, gula, sides of pronotum, petiole and coxæ.

Two major and a single minor worker taken by Dr. N. Holmgren at Tuiche, Bolivia and belonging to the Stockholm Museum.

Var. **otoquensis** var. nov.

Worker maxima. Length 13-14 mm.; head 4.5 mm. long, 4 mm. wide; hind tibia 5 mm.

Head narrowed behind at the posterior corners, which are narrow and very prominent; posterior border deeply concave; sides extensively and gula deep red, smooth and shining, with very fine, superficial punctures. Pronotal spines acute. Upper border of petiole strongly compressed, in some specimens irregular in outline, in others deeply excised in the middle. Appressed pubescence very dull yellow, shorter and less abundant on head, thorax and petiole than in the var. *satrapa*. Legs somewhat brownish.

Workers major and media. Length 10-12 mm.

Like the maxima in color and pubescence, except that the sides of the head are deep brown or black.

Described from a series of workers taken by myself Nov. 19, 1911 from a nest in the decayed portion of a large mango tree on Otoque Island, about 30 miles from the City of Panama.

Subsp. **rex** Forel.

Worker maxima. Length 13-14 mm.; head 4.5 mm. long and 4.5 mm. broad; hind tibia 5.2 mm.

Differing from the maxima worker of *sericeiventris* in its somewhat more robust stature, in having the head as broad as long, with more convex, or swollen cheeks, the

pronotum with short, very blunt spines, the meso- and metanotum less strongly compressed above, the petiole with blunt, broadly rounded superior border and more obtuse lateral angles, the flattened tibiæ somewhat broader. The appressed pubescence is coarser, longer and denser, deep golden yellow, feebly or indistinctly converging to the mid-dorsal line at the posterior borders of the gastric segments. Hairs abundant, on the head and thorax, black with deep fulvous tips, on the gaster fulvous throughout. Head and mandibles deep red, vertex blackish, sides, clypeus and gula shining and very finely punctate, the posterior corners with several short impressed line-like punctures.

Workers major, media and minor. Length 8-12 mm.

Resembling the maxima, except in having the head smaller and black throughout, the appressed pubescence, however, even more abundant, covering the thorax, coxæ, petiole and posterior half of the head as well as the gaster. Pronotal spines short and blunt, petiole with obtuse superior border as in the maxima.

Female (undescribed). Length 16-17 mm.; fore wing 15.5 mm.

Resembling the worker maxima, but head slightly longer than broad, subtrapezoidal, with rather straight sides and feebly excavated posterior border; the sides, clypeus and gula smooth and shining, deep red, as are also the mandibles. Pronotum with small blunt projections instead of the spines. Petiole shaped as in the maxima. Pubescence, especially on the head and thorax somewhat shorter. Scutellum and anterior portion of mesonotum smooth and shining, without pubescence. Wings colored as in the typical *sericeiventris*.

Costa Rica: Pacuarito, type-locality (W. Paap).

Guatemala: Champerico, Corinto and San Benito (R. Paessler); Retaluleu (Stoll); Patulul (Wheeler).

Mexico: La Zacualpa, Chiapas (A. Petrunkevitch). Santa Lucrezia, Vera Cruz (F. Knab); Cordova; Remutadero, Cameron and Mirador, Vera Cruz (E. Skwarra).

Var. **semirex** var. nov.

Workers media and minor. Length 8-11 mm.

Very similar to *rex,* but the appressed pubescence is almost lacking on the thorax and petiole, though well developed on the head and dorsal surface of the pronotum. The pronotal spines are very short and obtuse, the petiolar scale with blunt, broadly rounded border as in *rex.*

Described from five specimens taken by Dr. J. Bequaert at Corocito, Honduras.

Var. **cualatensis** var. nov.

Worker maxima. Length 12-14 mm.; head 5 mm. x 5 mm.; hind tibia 5.2 mm.

Head entirely red, shining, especially on the sides and clypeus; mandibles black. Pronotal spines as in *rex.* Petiole with sharp, compressed dorsal border, seen from behind broadly rounded, entire, with pronounced lateral angles. Appressed pubescence dull, rather ochraceous yellow, less abundant on the sides of the thorax than in *rex.* Hairs abundant, but distinctly shorter, especially on the epinotum and gaster, fulvous yellow. Legs somewhat reddish.

Workers major, media and minor. Length 8-12 mm.

Like the maxima, except for the smaller head. This is more or less reddish in the major but black in the smaller phases. Meso- and epinotum strongly compressed dorsally, as is also the border of the petiolar scale.

Mexico: Cualata, Colima, type-locality (C. H. T. Townsend); Jalapa (S. F. Rangel); Guadalajara (J. F. McClendon; M. Diguet).

Var. **zacapensis** var. nov.

Worker maxima. Length 13-15 mm.; head 5 x 5 mm.; hind tibia 5.5 mm.

Resembling the maxima of *cualatensis* but with the head black. Pronotal spines broad and obtuse, somewhat flattened. Dorsal border of petiolar scale blunt, not compressed,

seen from behind broadly rounded and entire. Appressed pubescence dull ochraceous, slightly brighter on the gaster than in *cualatensis,* very short and feebly developed on the vertex, long and more conspicuous on the middle of the pronotum, shorter on the dorsum of the mesonotum, absent on the pleuræ and coxæ, very short on the posterior surface of the petiole. Hairs short, especially on the gaster where they are mostly orange yellow; on the head and thorax with black bases and orange tips.

Workers major, media and minor. Length 8-12 mm.

Like the maxima, but head smaller and without shining sides, gula and clypeus; in the smaller individuals with nearly straight posterior border. Pronotal spines very obtuse as in the maxima; meso- and epinotum more strongly compressed above. Hairs similar but less abundant on the head and thorax.

Described from numerous specimens which I took Dec. 14, 1911, from a flourishing colony nesting in the decayed wood of a large Celtis tree in the very arid country around Zacapa, Guatemala. There are also specimens in the Museum of Comparative Zoology from Portilla Grande, Honduras (R. E. Stadelmann).

Var. **quiriguensis** var. nov.

Worker maxima. Length 12-13 mm.; head 4.5 x 4.5 mm.; hind tibia 5 mm.

Smaller than the preceding variety, but the head very similar, black with somewhat less shining sides. Pronotal spines and petiolar node similar. Appressed pubescence on the gaster dense and brilliant golden as in the typical *rex,* but almost absent on the head and thorax, there being only some short dilute ochraceous pubescence on the vertex and dorsum of the pronotum. Hairs similar, but less abundant on the head and thorax and somewhat longer on the gaster, though not as long as in *rex.*

Workers major, media and minor. Length 8-11 mm.

Very similar to the maxima, except for the smaller head and opaque cheeks and clypeus. Spines of pronotum, though blunt, more slender than in the var. *zacapensis*.

Described from several workers taken by myself Jan. 13, 1912, running on the trunk of a recently felled tree in the banana plantations near Quirigua, Guatemala (type-locality). I possess specimens also from the following localities in the same republic: Polochic River and Cacao, Trece Aguas, Alta Vera Paz (Barber and Schwarz), Livingston (H. S. Barber), Los Amates, Baja Vera Paz and Sanarola (Kellerman), and from Belize, British Honduras.

A NEW ANT-LIKE CERAMBYCID BEETLE FROM HONDURAS

By W. S. Fisher

Of the Bureau of Entomology, United States Department of Agriculture

In nearly all of the later works on Cerambycidæ the genus *Eplophorus* Chevrolat is placed as a synonym of *Apelocera* Chevrolat, but the former name seems to be valid and should be used for the species of this genus. Thomson (Classif. Ceramb., 1860, p. 229), under the genus *Tillomorpha,* gives *lineoligera* Blanchard as the typical species, and states that *Tillomorpha spinicornis* Chevrolat from Mexico and another species in his collection from Venezuela have the third joint of the antennae strongly spinose at the extremity, and should constitute a new genus, but he does not give it a new name. Chevrolat (Journ. Ent., vol. 1, 1861, p. 248) quotes Thomson's remarks on *spinicornis,* and states that he has proposed the name *Eplophorus* in a printed catalogue for this Mexican species. Chevrolat (Ann. Soc. Ent. France, ser. 4, vol. 2, 1862, p. 61) erects the genus *Apelocera* for a new species, *waltli,* from Brazil, also includes *spinicornis,* and in a footnote he says: "I propose to give *Apelocera* to the insects which I previously placed in the genus *Eplophorus* (Journ. Ent., vol. 1, 1861, p. 248), as I abandon *Eplophorus* since the root of this genus has not proper significance." In this same publication (Ann. Soc. Ent. France, ser. 4, vol. 2, 1862, p. 535), Chevrolat writes *Apilocera* instead of *Apelocera,* and this name has been used by Pascoe (Trans. Ent. Soc. London, ser. 3, vol. 5, 1866, p. 295), and also by Bates (Biol. Centr.-Amer., Coleopt., vol. 5, 1880, p. 60; 1885, p. 305).

Eplophorus velutinus new species

Male.—Moderately large, elongate, black, and subopaque; elytra ornamented with a short, oblique, smooth, ivory fascia, extending from near the lateral margin to middle of each elytron.

Head about as wide as long, and nearly flat in front, sides nearly parallel between the eyes, flat between the antennal tubercles, which are very widely separated and scarcely elevated, surface coarsely, irregularly punctate, more or less longitudinally rugose, sparsely clothed with short, recumbent, white hairs, with a very long seta arising from a large puncture on each side behind the epistoma; eyes small, finely granulated, distinctly divided, lower lobes rounded, upper lobes very small and narrow. Antenna eleven-jointed, about three-fourths as long as the body, sparsely clothed with very short cinereous pubescence and a few long, moderately stiff, black hairs; first joint robust, about three times as long as wide; third joint nearly as long as the following three joints united, and armed with a very long spine at apex; fifth joint slightly longer than fourth and both joints armed with a short spine at apex.

Pronotum slightly longer than wide, slightly narrower at base than at apex, and strongly convex; sides strongly arcuately rounded, and more strongly constricted at base than at apex; surface sparsely covered with elongate elevations, rather densely clothed with recumbent, yellowish pubescence, with numerous long, erect hairs intermixed, the pubescence shorter and more inconspicuous on apical half, with a small, round, conspicuous, black, pubescent spot on each side in front of the middle. Scutellum narrowly triangular, and densely clothed with recumbent, yellowish pubescence.

Elytra about twice as long as wide, and at base about equal in width to the pronotum at middle, strongly, abruptly deflexed at base, arcuately deflexed at apex, strongly, transversely depressed at middle, humeri distinct, and strongly elevated, a large longitudinal callosity on each side near the base, at middle a moderately wide, oblique, glabrous fascia,

in front of which is a narrow, oblique, smooth, eburneous fascia, extending from near lateral margin to middle of each elytron; sides nearly parallel to behind middle, where they are strongly, arcuately expanded, with the tips broadly truncate; surface finely, densely punctate, except on middle glabrous fascia and tops of the callosities, where it is coarsely, confluently punctured, rather sparsely clothed on basal half with long, recumbent, yellowish pubescence, apical half densely clothed with long, silky, golden yellow pubescence, which conceals the surface, and with numerous long, erect hairs intermixed over the entire surface.

Beneath finely punctate, with a few coarse punctures intermixed, sparsely clothed with recumbent pubescence and a few long, erect hairs intermixed, pubescence golden yellow on abdomen and silvery white on rest of surface. Legs long, sparsely clothed with short, white pubescence, and long, stiff, black and white hairs intermixed; femora strongly expanded at middle; tibiae slightly arcuate, strongly flattened, and longitudinally carinate.

Length, 9-10 mm.; width, 2.8 mm.

Type locality.—Prieta, Republic of Honduras.

Other localities.—San Pedro, Honduras. Cacao, Trece Aguas, Alta Vera Paz, Guatemala.

Type, allotype, and paratypes.—Cat. No. 43479, United States National Museum.

Described from four examples, two males (one type), and two females. The type (male) and one male paratype collected at the type locality, April 5, 1924, by Dr. J. Bequaert, allotype collected at San Pedro, Honduras, April 21, 1923, by S. C. Bruner, and one paratype collected at Cacao, Trece Aguas, Alta Vera Paz, Guatemala, by G. P. Goll.

This species is very closely allied to *magna* Bates, but differs from that species in being smaller, the pronotum not much longer than wide, with the entire apical half of the elytra densely clothed with silky, golden yellow pubescence. In the two females the pronotum and basal half of the elytra are not clothed with yellowish pubescence.

NOTES ON NORTH AMERICAN ANYPHÆNINÆ IN THE MUSEUM OF COMPARATIVE ZOOLOGY

By Elizabeth B. Bryant

In a recent revision of the spiders of this sub-family in the Museum of Comparative Zoology from North and Central America and the West Indies, it was found that there has been much confusion in the use of genera. The genus Anyphæna was made by Sundevall in 1833 (Conspectus Arachnidum, p. 20) for *Aranea accentuata* Walckenaer. L. Koch (Die *Arach.* fam. Drassiden, 1866, p. 194) first called attention to the position of the ventral furrow, "as either in the middle of the length of the abdomen or behind the middle." Nicolet (Say, Hist. de Chili, 1849, 3, p. 450) made the genus Gayenna for the South American species where the posterior spiracular openings are nearer the spinnerets than to the epigastric plate. F. O. P. Cambridge (Biologia Centrali-Americana, 1900, 2, p. 94), definitely restricts the genus to "Spiracular rima situated behind the middle of the ventral area of the abdomen towards the spinners," and states that the genus is not found in Central America. Mr. Banks has used the genus Gayenna when the ventral furrow is behind the middle of the entire abdomen.

The genus Marcellina has been made for *Clubiona piscatoria* Hentz, known only from two males from Alabama and an immature male from Newton, Massachusetts. The large anterior median eyes, the peculiar palpus, and the short spines on the legs are very different from any other genus.

Hentz, in his descriptions of *Clubiona saltabunda* and *C. albens*, questions the generic position. The exaggerated

length of the legs in both sexes, the difference in the male palpi and the number and arrangement of spines on the legs do not agree with any of the genera from Central America, so the new genus Anyphænella has been made for them.

1. Ventral furrow one-third nearer epigastric plate than to spinnerets ..... Aysha.

   Ventral furrow one-third nearer spinnerets than to epigastric plate, anterior median eyes largest ..... Marcellina

   Ventral furrow about midway between epigastric plate and spinnerets, anterior eyes equal or median slightly smaller ..... 2.

2. Anterior tibiæ as long as both cephalothorax and abdomen ..... Anyphænella

   Anterior tibiæ normal ..... Anyphæna.

Marcellina gen. n.

Type: *Clubiona piscatoria* Hentz.

Cephalothorax oval, thoracic groove rather long, front broad and obtuse. Anterior row of eyes slightly recurved, equidistant, median largest of the eight; posterior row procurved and equal; quadrangle higher than wide, wider in front; lateral eyes separated by less than diameter of anterior laterals. Clypeus not as wide as diameter of anterior median eye. First leg longer than fourth; anterior legs with few spines on ventral side. Mandibles of male well-developed with two widely separated teeth on superior margin of groove and two teeth on inferior margin. Ventral furrow one-third nearer spinnerets than to epigastric plate.

The genus differs from Gayenna, which has the ventral furrow near the spinnerets, by the large median eyes and from the other American genera by arrangement of the eyes, number of teeth on the mandibles and the shorter spines on the legs.

Marcellina piscatoria (Hentz)

FIGS. 1, 2

Clubiona piscatoria Hentz, Journ. Boston Soc. Nat. Hist.; 1847, 5, p. 450, pl. 23, f. 15; "♂ Alabama"; reprint, 1875, p. 84, pl. 10, f. 15, pl. 18, f. 29.

♂ 7 mm. long, cephalothorax 3 mm. I leg, 15 mm. long.

Cephalothorax pale yellow without markings, covered with many fine, black hairs; abdomen pale yellow without markings, with many long, fine hairs; legs pale, covered with dark hairs; spines on all legs less than diameter of joint, few and becoming irregular; more spines on upper side of legs than on ventral. Spines, I leg, tibia 2, near middle, 1 lateral, all less than diameter of joint; metatarsus 2-2, 1 lateral. Metatarsus as long as tibia.

Eyes; anterior row recurved, equidistant, A. M. E. largest; posterior row procurved so that lateral eyes are almost touching, equal in size; P. M. E. slightly nearer P. L. E. than to each other and smaller than A. M. E. Clypeus about as wide as diameter of A. L. E.

Mandibles, brown, porrect, one-half the length of cephalothorax, covered with long, black hairs. Two isolated teeth on superior margin and two isolated teeth on inferior margin. Cephalothorax widest between II and III leg and only slightly narrowed in front of I coxae; thoracic groove rather long, sternum triangular, widest between coxae I and II; coxae IV separated by less than half a diameter. Ventral furrow one-third nearer the spinnerets than to the epigastric plate.

Palpus. Femur two-thirds as long as cephalothorax, curved, tibia but little longer than patella, with apophysis near tip, as in figure 1, tarsus longer than femur and prolonged far beyond the palpal organ; embolus prolonged in a fine straight point the length of the tarsus.

2 ♂ Ala.; Auburn, C. F. Baker coll.; 1 ♂ im.; Mass.; Newton 17 Oct., 1904, E. B. Bryant coll.

Anyphæna

Type: *Aranea accentuata* Walckenaer, 1802.

Cephalothorax oval, thoracic groove rather long, front broad and obtuse. Anterior row of eyes straight or weakly recurved, the median usually the smallest; posterior row weakly procurved, equal and usually equidistant; quadrangle of median eyes higher than wide and narrower in front; lateral eyes well separated. Legs long with scopulæ on all tarsi and often on the anterior metatarsi. Ventral furrow about midway between epigastric plate and spinnerets.

The genus Anyphæna was made by Sundevall in 1833. (Conspectus Arachnidum, p. 20) for *Aranea accentuata* Walckenaer. In this species the ventral furrow is a little nearer the epigastric plate than to the spinnerets and there is one pair of spines (basal) on the anterior metatarsi. The A. M. E. are smaller than the A. L. E., the mandibles are vertical, with two teeth on the inferior margin of the groove and the palpus is quite unlike any of the American forms.

In a careful examination of one of the common species (*A. celer* Hentz), it is found that the position of the ventral furrow often varies from the middle to just in front, or a little behind the middle, so that it is not easy to use as a primary character, but in all species examined the position of the furrow is approximately the same in the two sexes, also the number and arrangement of the spines on the anterior legs. With the exception of *A. calcar* sp. n. from Florida and *A. aperta* Banks from Washington all the American species have two pairs of spines on the first and second metatarsi. The first species also differs in having a large club-shaped process on the patella of the male palpus, a character found on at least one European species.

In 1913 Berland, Araignees de l'Equateur, called attention to the subdivision made by M. Simon in 1903. The first group has two teeth on the inferior margin of the mandibles and the ventral furrow is nearer the spinnerets than to the epigastric plate. The second group, which includes Anyphæna, has several teeth on the inferior margin

(from 4 to 10), and the ventral furrow is nearer the epigastric plate than to the spinerets. This character of teeth is found variable, as in *A. laticeps* sp. n. there are no teeth on the superior margin of the male and a distinct carina on the inferior margin; and in the female, a carina on the superior margin and no teeth on the inferior margin, yet the male palpus is nearer the type of the genus than any other American species.

With the material available, the genus Gayenna is restricted to species from South America, with the ventral furrow near the spinnerets (at least one-third nearer than to the epigastric plate), and the genus Anyphæna, to species with the ventral furrow near the middle (midway between the epigastric plate and the spinnerets) and usually two pairs of spines beneath the anterior metatarsi. Future study may prove that the American species of Anyphæna may belong to some of the numerous neotropical genera, rather than to the European genus Anyphæna.

It has not been possible to make a satisfactory key for the females of the genus. Possibly when both sexes of all species are known, some character can be recognized by which they can be separated, but at present they can be identified only by the vulva. In both sexes the number and position of spines on the anterior legs is the same.

Anyphæna

Males

1. I metatarsus 1-1 spines, head broad, mandibles geniculate, large club-shaped spur on patella of palpus *calcar* sp. n.

   I metatarsus 2-2 spines ..... *2.*

2. Head but little narrowed in front of I coxae, mandibles porrect, cephalothorax shining chestnut brown *laticeps* sp. n.

   Head less than half as wide as cephalothorax between II and III legs, cephalothorax never brown ..... 3.

3. II, III and IV coxae modified ..... 4.
   All coxae normal ..... 5.

4. III coxae with posterior spur bifid and with central process of palpus broad ..... *pectorosa* Koch.
   III coxae with posterior spur slender and curved and with central process of palpus slender ..... *fraterna* Banks.

5. III leg modified ..... 6.
   III leg normal ..... 9.

6. III tibia with 2 short, stout spines on ventral, posterior margin ..... 7.
   III tibia with but 1 short, stout spine on ventral posterior margin ..... 8.

7. Dorsal section of tibial apophysis of palpus broad and triangular ..... *celer* Hentz
   Dorsal section of tibial apophysis slender and sharp ..... *maculata* Banks.

8. Tip of ventral part of tibial apophysis fairly broad and bifid and upper part reduced to a small, sharp point scarcely noticeable ..... *coloradensis* sp. n.
   Tip of ventral part of tibial apophysis rather slender and notched, and the upper lobe fairly large, pointed and triangular ..... *crebrispina* Chamb.

9. Distal apophysis of tibia ending in a simple, sharp point, tibia twice length of patella ..... *ruens* Chamb.
   "Distal apophysis in form of undivided chitinous lamina and narrowing distad, but with apex subtruncate and weakly notched at middle" ..... *saniuana* Chamb.

Anyphæna calcar sp. n.

FIG. 3

♂ 4 mm. long; cephalothorax 1.7 mm.

Cephalothorax yellowish, darker in front with white hairs on head; abdomen pale yellow with many dark spots and streaks, which unite in the posterior median part to form a series of chevrons; legs yellowish with faint traces

of dark spots; spines, I leg; tibia 2-2, second pair at about middle of joint, 2 lateral; metatarsus 2, 1 lateral, scopulae very scant on anterior tarsi and metatarsi.

Anterior row of eyes slightly recurved, equidistant, A. M. E. smallest; posterior row longer than anterior, P. M. E. slightly nearer P. L. E. than to each other, P. M. E. largest; quadrangle higher than distance between P. M. E. eyes. Clypeus narrow, scarcely more than diameter of A. M. E. eyes. Mandibles vertical, with many long, black hairs; superior margin of fang groove, a denticulate carina; inferior margin a group of five minute teeth near median edge.

Ventral furrow midway between spinnerets and epigastric plate.

Palpus. Patella and tibia of equal length, the former with a large club-shaped spur on the outer side, nearly as long as the joint; tibia with a long apophysis resting against the palpus, ending in a sharp spine; the ventral side of the tibia has a pronounced keel two-thirds the length of the joint. The upper half of the palpal organ has a large white sack with a slender white filament at the upper end and a tube from the lower part which bends and disappears in the upper part of the organ. On the inner side is a piece ending in a sharp point a little above the white sack, and in the opposite side is a slender piece ending in a curved hook.

Type: 3 ♂ Fla.; Dunedin, 1927, W. S. Blatchley coll.

This is the only American species of Anyphæna with a spur on the patella.

Anyphæna laticeps sp. n.

Figs. 4, 24

♂ 4 mm. long; cephalothorax 1.5 mm., abdomen 2.5 mm. Cephalothorax shining chestnut brown, a little darker about the eyes; abdomen greenish gray; legs little lighter in color than cephalothorax, long and slender with darker bands at middle and end of tibia. Spines, I tibia 2-2, long

and slender, no lateral, metatarsus 2-2, long and slender, no lateral.

Eyes: anterior row straight, equal and equidistant; posterior row slightly procurved, longer than anterior row, P. M. E. little nearer P. L. E. than to each other; laterals separated by radius of P. L. E.; quadrangle as high as distance between P. M. E. Clypeus a little wider than diameter of anterior eyes.

Mandibles dark, porrect and more than half as long as cephalothorax, no teeth on superior margin of groove, distinct denticulate carina on inferior margin; fang long and sinuate; labium longer than wide, half as long as maxillæ, and deeply notched.

Cephalothorax, narrowed but little in front of I coxae. Sternum twice as long as broad, widest between II coxae. Ventral furrow a little nearer epigastric plate than to spinnerets.

Palpus. Tibia twice as long as patella, apophysis one-third length of tibia and pressed close to tarsus. Palpal organ nearly fills the cavity.

♀ 4.2 mm. long.

Cephalothorax shining chestnut brown, darker about the eyes and with scattered white hairs on sides; abdomen pale yellow with irregular dark marks arranged to form broken chevrons; venter pale; legs lighter in color than cephalothorax without the dark bands and spines as in male.

Eyes as in male. Mandibles dark brown and geniculate; carina on superior margin of groove and no teeth on inferior margin. Cephalothorax narrowed but little in front of I coxae. Sternum light and shining, nearly twice as long as broad. Ventral furrow a little nearer epigastric plate than to spinnerets. Epigynum dark with two broad openings below two pairs of dark spots.

Type: ♂ ♀ Ga.; Thompson's Mills, H. Allard coll.

Paratypes. 1 ♀ Va.; Falls Church, N. Banks coll.; 1 ♀ Ala.; Auburn, C. F. Baker coll.

The dark color of the cephalothorax would seem to ally this species to *A. striata* Becker, but the description of

that species would indicate a much larger spider, possibly an Aysha.

The two following species are separated in the males by the modified posterior coxae.

Anyphæna pectorosa L. Koch

FIG. 5

Die Arach. fam. Drassiden, 1866, p. 198, pl. 8, f. 131, "1 ♂ Baltimore."

Anyphæna calcarata Emerton, Trans. Conn. Acad. Sci.; 1890, 8, p. 189, p. 6, f. 3, "♂ ♀ Conn.; West Haven, July . . . . N. Pike's Long Island Collection."

The IV coxae in the males have a small, pointed process directed outward; the III coxae have two processes, the posterior one is pointed inward and distinctly bifid, the anterior process is a blunt tooth. The principal process in the palpus is broad and flattened. On the upper side of the tibia is a small spine.

This species is found from Massachusetts south to North Carolina and Tennessee and west to Missouri.

Anyphæna fraterna (Banks)

FIGS. 6, 23

Gayenna fraterna Banks, Trans. Amer. Ent. Soc.; 1896, 23, p. 63. "♂ near Sea Cliff, N. Y. June."

Anyphæna conspersa Keyserling, Verh. Zool. bot. Ges. Wien 1887, 37, p. 453, pl. 6, f. 23 "♀ Ky.; Bee Spring," preoccupied by Simon, 1878.

This species is distinctly spotted. In the male the posterior process on the III coxae is slender and simple, not bifid as in *A. pectorosa.* In the palpus the largest process is slender and curved only at the tip. The tibia has a small cone-shaped process on the inner basal side as well as a short spine on the upper. The epigynum is long and narrow instead of broad as in *pectorosa.*

Type. 2♂ N. Y.; Sea Cliff, N. Banks Coll. Found from Massachusetts to Tennessee and Kentucky.

The four following species form a natural group, with the third leg in the male modified, with the third femur enlarged, and one or two stout, cone-shaped spines on the posterior ventral side of the tibia. In both sexes there is a distinct dark ring near the distal end of each femur.

Anyphæna celer (Hentz)

Figs. 7, 25, 28

Clubiona celer Hentz, Journ. Boston Soc. Nat. Hist.; 1847, 5, p. 452, pl. 23, f. 20; reprint, p. 87, pl. 10, f. 20. "North Carolina, Alabama."

Anyphæna incerta Keyserling, Verh. zool. bot. Ges. Wien, 1887, 37, p. 452, pl. 6, f. 22. "♀ Mass.; Cambridge."

A widely distributed species found under dead leaves from New England to Texas. The position of the ventral furrow varies from mid-way between the spinnerets and the epigastric plate and nearer to the epigastric plate. The under side of the tibia of the third leg has two very short spines on the posterior side.

A common species from Massachusetts south to Texas.

Anyphæna maculata (Banks)

Figs. 8, 31

Gayenna maculata Trans. Amer. Ent. Soc.; "♂ D. C.; Washington." 1896, 23, p. 64. S. C. Bishop and Crosby, Journ. Mitch. Soc. 1926, 46, p. 189, pl. 24, f. 37, 38.

Crosby and Bishop give a very full description of the male, but fail to mention the enlarged third femur and the two stout spines on the tibia of the third leg. The palpus is very similar to that of *A. celer*, but the tibial apophysis is quite distinct. The upper branch is shorter and ends in a sharp point, and the inner branch is a thin leaf-like plate, folded almost double. The large rounded protuberance on the basal half is larger and more conspicuous than in *A. celer*.

Type: ♂ D. C. Washington.

♂ ♀ N. Y. ; Sea Cliff, N. Banks Coll.; ♂ Va.; Falls Church, N. Banks Coll. 1♀ Ky.; Hart Co.; Rio. A. F. Archer coll.

Anyphæna coloradensis sp. n.

FIGS. 9, 10, 30, 33

♂ 4.5 mm. long.

Cephalothorax light brown with faint dark marks from the lateral eyes to the posterior margin; abdomen light yellow with five median dark bars slightly bent as chevrons, sides and venter with dark spots and streaks; sternum light; legs light with dark spots at base of spines; spines I leg, tibia, 2-2-2 none apical, 2 lateral, metatarsus, 2-2, 2 lateral, metatarsus shorter than tibia; coxae III and IV densely, minutely, spinulate, femur III enlarged and on ventral surface, minutely spinulate; two long spines on dorsal surface and one very short, stout spine on posterior, tibia III two long spines on anterior edge and one stout spine posteriorly, two lateral. Ventral furrow is nearer spinnerets than to epigastric plate. Eyes; anterior row recurved, A. M. E. smallest and less than their diameter apart, and less than radius from the A. L. E.; posterior row procurved, P. M. E. nearer P. L. E. than to each other; laterals separated by less than radius of A. L. E.; quadrangle nearly twice as high as distance between posterior median.

Palpus: Patella as long as tibia; tibial apophysis prolonged half the length of the tarsus, with upper edge serrate, with one distinct tooth midway, palpal organs filling the entire cavity and similar to A. celer.

♀ 4.7 mm. long.

Markings the same as in the male, but not quite as distinct, except on the legs where the dark marks are more pronounced. The posterior coxae are not roughened or the III femur enlarged. Eyes same as in the male. Epigynum as figured.

Type: 1 ♂, 2 ♂ Col.; Boulder, T. D. A. Cockerell coll. N. Banks Coll.

Anyphæna crebrispina Chamberlin

Fig. 11

Pomona Coll. Journ. Ent. Zool.; 1919, 12, p. 10, pl. 4, f. 4. "♂ Cal.; Claremont", No. 353.

The third tibia has but one stout spine on the posterior side. The tibial apophysis has the lower branch about one-third the length of the tarsus, with a distinct notch at the tip and the upper lobe in a pointed triangle.

Type: 1 ♂ Cal.; Claremont, R. V. Chamberlin Coll. This is probably the male of *Anyphæna californica* (Banks) as the later has been found at Claremont.

Anyphæna ruens Chamberlin

Pomona Coll. Journ. Ent. Zool.; 1919, 12, p. 11, pl. 5, f. 1. "♂ Cal.; Claremont, April, 1913, No. 352." Anyphæna mundella Chamberlin, ibid, p. 12, pl. 5, f. 3. ♀ *nec* ♂ "Cal.; Claremont."

In the original description of *A. mundella* the female only was described and the palpus of the male figured. On examining the specimens, the two obviously belong to different genera. The male has but one pair of spines on the anterior metatarsi, a broad low cephalic region and the ventral furrow quite near the epigastric plate, all characters of Aysha. The female has two pairs of spines on the anterior metatarsi, the narrow and high cephalic portion and the ventral furrow at "middle or slightly behind middle of abdomen." In all species of Anyphæna seen the number of spines on the anterior legs, shape of cephalothorax and the position of the ventral furrow is the same in both sexes.

Type: 1 ♂ M. C. Z. no. 352, Cal.; Claremont. 1 ♀ M. C. Z. no. 348, Cal.; Claremont.

♂ B. C.; Victoria, Taylor coll.; ♂ ♀ Cal.; Claremont; C. F. Baker coll.; Mt. Helens; 8 July, 1918. Helen Van Duzee coll.

The following species are known only from females.

Anyphæna aperta (Banks)

FIG. 35

Gayenna aperta Banks, Proc. Cal. Acad. Sci.; 1921, 11, p. 100, f. 3. "♀ Wash.; Olympia."

The ventral furrow is midway between epigastric plate and spinnerets. The spines on I tibia 2-2-2 (one pair distal), 2 lateral, metatarsus 2, 2 lateral.

Type: 1 ♀ Wash.; Olympia, T. Kincaid coll. 1 ♀ Wash.; Blakley Is.; 8 July 1928. L. G. Worley coll.

Anyphæna californica (Banks)

Gayenna californica Banks, Proc. Cal. Acad. Sci.; 1904, 3, p. 338, pl. 38, f. 2. "♀ Palo Alto, Mill Valley."

Anyphæna intermontana Chamberlin, Can. ent.; 1920, 52, p. 200, f. 6.

Type: 1 ♀ Cal.; Palo Alto, R. W. Doane coll.

1 ♀ Cal.; Marin Co.; Ross, 3 ♀ Claremont, N. Banks Coll. 2 ♀ Utah; Mill Creek, R. V. Chamberlin coll.

Anyphæna fragilis Banks

FIG. 32

Can. Ent.; 1897, 29, p. 194 "♀ Fla.; Jacksonville."

Gayenna parvula Banks, Proc. Ent. Soc. Wash.; 1899, 4, p. 191. "♀ La.; Shreveport."

Cephalothorax brown, darker about the eyes with scattered white hairs, cephalic groove short; abdomen pale, sometimes with a few marks bent almost to form chevrons posteriorly; venter pale without marks; legs pale, sometimes with traces of two dark rings on anterior tibiae, and at end of metatarsi. Spines; I leg, tibia, 2-2, long, no lateral metatarsus, 2-2, long, no lateral. Cephalothorax very broad at anterior margin, with only a slight narrowing in front of coxae I. Mandibles geniculate and very dark brown, covered short hairs.

Eyes; anterior row straight, equidistant and A. M. E. a little smaller than A. L. E.; posterior row procurved, equal and P. M. E. a little nearer to P. L. E. than to each other. Quadrangle but little higher than wide and narrowed in front. Clypeus low, but little wider than diameter of A. M. E. Ventral furrow a little nearer epigastric plate than to spinnerets.

Type: 2 ♀, 1 ♂ im. Fla.; Jacksonville; 2 ♀ La.; Shreveport. N. Banks Coll.; 1 ♀ Ga.; Bainbridge, J. C. Bradley coll.

Anyphæna pacifica (Banks)

FIG. 36

Gayenna pacifica Banks, Trans. Amer. Ent. Soc.; 1896, 23, p. 63. "♀ Wash.; Olympia."

Type: 3 ♀, 1 ♂ im. Wash.; Olympia, J. Kincaid coll.; 1 ♀ Idaho; Moscow Mts., 29 Oct. 1910. J. A. Hyslop coll.; 2 ♀ Wash.; Wawawai, W. M. Mann coll.; 1 ♀ Cal.; Mt. Tamalpais, Cal. Acad. Sci. Coll.

Anyphæna zina Chamberlin

Pomona Coll. Journ. Ent. Zoöl.; 1919, 12, p. 11, pl. 4, f. 5.
Type: 1 ♀ Cal.; Claremont, R. V. Chamberlin coll.

Anyphænella gen. n.

Type: *Clubiona saltabunda* Hentz.

Eyes similar to Anyphaena; A. M. E. smaller than A. L. E. Mandibles vertical on both sexes, with row of many minute teeth on the inferior margin, and a row of four distinct teeth on the superior margin. First leg longest and tibia longer than or nearly as long as the entire length of spider. Two pairs of spines beneath I tibia and two pairs beneath I metatarsus. Ventral furrow about midway between spinnerets and epigastric plate.

It differs from Wulfila in the number of spines on the metatarsi and from Sillus in the much longer legs and the structure of the male palpi.

Anyphænella saltabunda (Hentz)

FIGS. 18, 22

Clubiona ? saltabunda Hentz, Journ. Boston Soc. Nat. Hist.; 1847, 5, p. 453, pl. 23, f. 23; "Alabama". reprint, p. 89, pl. 10, f. 23, pl. 18, f. 19.

Anyphæna saltabunda Emerton, Trans. Conn. Acad.; 1890, 8, p. 187, pl. 6. f. 4.

♂ 3.5 mm. long; ♀ 4 mm. long.

Cephalothorax, abdomen and legs light yellow with gray, broken stripes on cephalothorax, and a broken marginal band; two parallel rows of gray dots on the abdomen. Sternum light with a scalloped dark mark around edge. Legs very long and slender. I metatarsus as long as I tibia. Spines, I tibia, 2-2-2. 2 lateral; metatarsus, 2-2, 3 lateral.

Front less than half the width of cephalothorax between III legs. Eyes; anterior row straight, A. M. E. smallest; posterior row procurved, equal, P. M. E. nearer P. L. E. than to each other; lateral eyes almost touching. Clypeus width of A. M. E. Mandibles small and vertical, with four teeth on superior margin and with many, minute ones on the inferior. Labium slightly notched. Ventral furrow midway between epigastric plate and spinnerets.

Palpus: tibia more than twice as long as patella, much bent and the apophysis near the base.

Epigastric plate extends nearly across the abdomen.

Found from Massachusetts to Florida and west to Wyoming.

Anyphænella alba (Hentz)

FIGS. 20, 21

Clubiona ? albens Hentz. Journ. Boston Soc. Nat. Hist.; 1847, 5, p. 454, pl. 23, f. 24; "Alabama" reprint, p. 89, pl. 10, f. 24, pl. 18, f. 32.

Chiracanthium albens Hentz, Banks, Proc. Phila. Acad.; 1904, p. 123.

♂ 4.5 mm. long; ♀ 4 mm.

Cephalothorax, abdomen and legs almost colorless and without markings. Legs very long and slender, I metatar-

sus longer than I tibia. Spines, I tibia, 2-2, 2 lateral, metatarsus 2-2, 2 lateral. Eyes; anterior row slightly recurved, A. M. E. smallest and less than a diameter apart, and nearer to each other than to the A. L. E.; posterior row, procurved, equal and equidistant, oval and surrounded by black, quadrangle much higher than wide, anterior side about half as wide as posterior. Mandibles small and vertical. Ventral furrow a little nearer epigastric plate than to spinnerets.

♂ D. C.; Washington, N. Banks Coll.; Va.; Falls Church, N. Banks Coll.; N. C. Raleigh, C. S. Brimley coll. Aug. 1916. 1 ♀ Ky.; Bee Spring, F. G. Sanborn; 1 ♀ Fla.; Sebastian, 17 Apr. 1919, G. Nelson coll.

Aysha

Type: *Aysha prospera* Keyserling.

Cephalothorax low and broad, only slightly narrowed in front of the first coxae. Posterior row of eyes almost straight, anterior row subequal; clypeus about as wide as diameter of anterior median eye. First leg usually longer than fourth, one pair of spines beneath on first metatarsi. Ventral furrow near epigastric plate, at least one-third nearer than to spinnerets. The male palpus has the embolus in a sweeping circular curve, and the epigynum with a distinct circular chitinous rim.

F. O. P. Cambridge states (Biol. Cent. Amer., 1900, 2, p. 98), that the lower fang groove of the mandible has 3-7 teeth. In *A. cambridgei* sp. n. there are no teeth on the lower groove, and the upper groove has a denticulate carina, instead of the usual three or four distinct teeth.

Males

1. Tibia of palpus with 1 spur 2
   Tibia of palpus with 2 spurs 5

2. Tibia much longer than tarsus, spur bifid at tip *longipalpus* sp. n.
   Tibia plainly not longer than tarsus 3

3. Tibia shorter than tarsus, spur as long as tibia. I tibia 2-2. 1 lateral, metatarsus 2, 1 lateral....*gracilis* Hentz
   Tibia about as long as tarsus, spur shorter than tibia 4

4. I leg, tibia 2-2-2. 2 lat., metatarsus 2, 1 lateral. Spur with large hook at tip .....*velox* Becker.
   I leg, tibia, 2-2, no lat., metatarsus 1-1, no. lat., spur sinuous with minute hook at tip .....*cambridgei* sp. n.

5. Upper spur as long as tibia and with rest of joint as long as tarsus.....*minuta* Camb.
   Upper spur shorter than tibia but with tibia longer than tarsus.....*decepta* Banks

Aysha longipalpus sp. n.

FIG. 12

♂ 10 mm. long. ceph. 4 mm.

Cephalothorax light brown with scattering white hairs; abdomen light grey without markings; legs light brown, first and second darkest. Spines, I, leg, tibia, 2-2-2, (one pair distal), no lateral; metatarsus, 2, no lateral. I femur 5 mm., patella 1.5 mm.; tibia 7.5 mm., metatarsus 8 mm., tarsus 2 mm. Eyes; anterior row slightly recurved, equal and equidistant; posterior row procurved, equal and equidistant; lateral eyes radius of P. L. E. apart. Clypeus slightly more than radius of anterior eyes. Mandibles porrect, two-thirds as long as cephalothorax; four teeth on superior margin and a row of minute teeth on inferior margin; fang long; sternum widest between II and III coxae and prolonged between the IV coxae. Ventral furrow very near epigastric plate.

Palpus. Tibia much longer than tarsus and more than twice as long as patella; very slender, apophysis bifid at tip and little longer than diameter of the segment. Appendages of the palpal organ confined to the upper half of the bulb.

Type: 1 ♂ Costa Rica; San Jose, Valerio coll.

Differs from *A. tenuis* (L. Koch) Fig. 19, by the longer and more slender tibia, notched tibial apophysis and smaller palpal organ.

Aysha gracilis (Hentz)

FIGS. 13, 26

Clubiona gracilis Hentz, Journ. Boston Soc. Nat. Hist.; 1847, 5, p. 452, pl. 23, f. 19; reprint, p. 86, pl. 10, f. 19, pl. 18, f. 8. "North Carolina, Alabama."

Anyphæna rubra Emerton, Trans. Conn. Acad., 1890, 8, p. 186, pl. 6, f. 1. "♀, Massachusetts and Connecticut and in Pike's Long Island Collection." ibid, 1909, 14, p. 220, pl. 9, f. 8.

Aysha orlandensis Tullgren. Bih. Svensk. Akad.; 1901, 27, p. 19. f. 4. "♀ Fla.; Orlando."

A widely distributed species from Massachusetts to Florida and as far west as Nebraska.

Aysha velox (Becker)

FIGS. 14, 34

Anyphæna velox Becker, Ann. Soc. Ent. Belg.; 1879, 22, p. 83, pl. 2, f. 5-7. ♀ "Mississippi; near Pascagoula."

Anyphæna floridana Banks, Trans. Amer. Ent. Soc.; 1896, 23, p. 63. "♀ Fla.; Lake Worth."

Chiracanthium falculum Chamberlin, Bull. Mus. Comp. Zoöl.; 1925, 67, p. 220. "♂ Fla.; Sebastian."

The type, a female, is from Miss. It is the common Aysha in Florida, Alabama and Louisiana, and is found in Bermuda, Cuba and was found by Mr. Banks on Taboga Island, Panama, 29 June, 1925.

Aysha cambridgei sp. n.

FIG. 15

♂ 8.5 mm. long; ceph. 3 mm.

Cephalothorax light brown; abdomen yellowish grey without markings; legs light brown, lighter than cephalo-

thorax. Spines, I leg, tibia 2-2, no lateral, metatarsus 2, no lateral. I femur 4 mm., patella 1.8 mm., tibia 4.8 mm.; metatarsus 4 mm., tarsus 2 mm. Eyes; anterior row slightly recurved, equal and equidistant, posterior row procurved, equal and equidistant, lateral eyes separated by diameter of P. L. E. Posterior eyes not surrounded by black. Mandibles brown, less than one-half as long as cephalothorax; porrect; denticulate carina on superior margin and teeth and carina lacking on inferior margin. Maxillæ much broadened above the emargination, labium notched at tip. Sternum twice as long as broad.

Palpus. Tibia not as long as tarsus. Apophysis two-thirds as long as tibia ending in a small hook. Appendages of palpal organ filling three-quarters of upper portion of tarsus.

Type: 1 ♂ Mexico; Guanajuato. N. Banks coll.

The palpus is similar to *A. velox* Becker, but differs in the larger and heavier tibial apophysis. The spines on the anterior legs are quite different, also the teeth on the mandibles.

Aysha minuta F. O. P. Cambridge

FIG. 17

Biol. Cent. Amer. 1900, 2, p. 99, pl. 7, f. 18, 19. M. C. Z. Coll. 1 ♂ Mex.; Mexico City. 1 ♀ Costa Rica, San Jose. Tristan Coll.

Aysha decepta (Banks)

FIGS. 16, 27

Anyphæna decepta Banks, Proc. ent. soc. Wash.; 1899, 4, p. 190. "♀ La., Shreveport; Texas, Brazos Co."

Anyphæna incursa Chamberlin, Pomona Coll. Journ. Ent. Zool.; 1919, 12, p. 12, pl. 5, f. 2. "♀ Cal.; Claremont."

Anyphæna mundella Chamberlin, ibid, p. 12, pl. 5, f. 4. ♂ *nec.* ♀. "Cal.; Claremont."

Anyphæna johnstoni Chamberlin, Proc. Cal. Acad., 1924. 12, p. 662, f. 105, 106. Gulf of California.

Found in Louisiana, Texas and California. This species may prove to be *Aysha simplex* Cambridge, Biol. Cent. Amer., 1897, 1, p. 227, pl. 29, f. 4, 5. Panama, Veraguas. Cambridge says, "Palpi, short, slender, cubital joint short, not half the length of the radial, which is very lightly curved, cylindrical, furnished with a few long, slender spine-like bristles, and has a tapering somewhat sinuous reddish-yellow brown apophysis projecting nearly at right angles to the joint at its fore extremity on the outer side. This apophysis is longer than the width of the joint."

In the Spiders of Porto Rico, Trans. Conn. Acad.; 1930, 31, p. 61, Mr. Petrunkevitch has placed *Aysha simplex* Cambridge as a synonym of *Aysha tenuis* L. Koch. From the number of specimens in the Museum of Comparative Zoology collection from various islands in the West Indies, the tibia of the male palpus of *Aysha tenuis* is longer than the tarsus, and at least five times as long as the diameter; there is but one tibial apophysis, not two, which is comparatively short, the embolus occupies the upper half of the palpal organ.

From the two figures of *Aysha simplex* Cambridge, the tarsus is longer than the tibia, which is about three times the diameter; there are two apophyses and the embolus occupies more than half the palpal organ. It differs from *Aysha decepta* (Banks) by the shorter upper apophysis and the relatively smaller palpal organ.

Aysha nigrifrons (Chamberlain and Woodbury)

Anyphæna nigrifrons Chamberlain and Woodbury, Proc. Biol. Soc. Wash.; 1929, 42, p. 137, pl. 1, f. 4. ♀ "Utah, St. George, Dec. 1925."

The figure of the epigynum, number of teeth on the inferior margin of the mandibles and number of spines on the anterior metatarsi show that this species is an Aysha rather than Anyphæna.

PLATE 6

Fig. 1. *Marcellina piscatoria* (Hentz) lateral view of left palpus.

Fig. 2. *Marcellina piscatoria* (Hentz) dorsal view of eyes.

Fig. 3. *Anyphæna calcar* sp. n. ventral view of palpus.

Fig. 4. *Anyphæna laticeps* sp. n. ventral view of palpus.

Fig. 5. *Anyphæna pectorosa* L. Koch lateral view of palpus.

Fig. 6. *Anyphæna fraterna* (Banks) lateral view of palpus.

Fig. 7. *Anyphæna celer* (Hentz) lateral view of palpus.

Fig. 8. *Anyphæna maculata* (Banks) lateral view of palpus.

Fig. 9. *Anyphæna coloradensis* sp. n. lateral view of palpus.

Fig. 10. *Anyphæna coloradensis* sp. n. ventral view of palpus.

Fig. 11. *Anyphæna crebispina* Chamberlin lateral view of palpus.

PLATE 7

Fig. 12. *Aysha longipalpus* sp. n. lateral view of palpus.

Fig. 13. *Aysha gracilis* (Hentz) lateral view of palpus.

Fig. 14. *Aysha velox* (Becker) lateral view of palpus.

Fig. 15. *Aysha cambridgei* sp. n. lateral view of palpus.

Fig. 16. *Aysha decepta* (Banks) lateral view of palpus.

Fig. 17. *Aysha minuta* Cambridge lateral view of palpus.

Fig. 18. *Anyphænella saltabunda* (Hentz) lateral view of palpus.

Fig. 19. *Aysha tenuis* (L. Koch) lateral view of palpus.

Fig. 20. *Anyphænella alba* (Hentz) epigynum.

Fig. 21. *Anyphænella alba* (Hentz) lateral view of palpus.

Fig. 22. *Anyphænella saltabunda* (Hentz) epigynum.

Plate 8

Fig. 23. *Anyphæna fraterna* (Banks) epigynum.

Fig. 24. *Anyphæna laticeps* sp. n. epigynum.

Fig. 25. *Anyphæna celer* (Hentz) third left leg.

Fig. 26. *Aysha gracilis* (Hentz) epigynum.

Fig. 27. *Aysha decepta* (Banks) epigynum.

Fig. 28. *Anyphæna celer* (Hentz) epigynum.

Fig. 29. *Anyphæna californica* (Banks) epigynum.

Fig. 30. *Anyphæna coloradensis* sp. n. epigynum.

Fig. 31. *Anyphæna maculata* (Banks) epigynum.

Fig. 32. *Anyphæna fragilis* Banks epigynum.

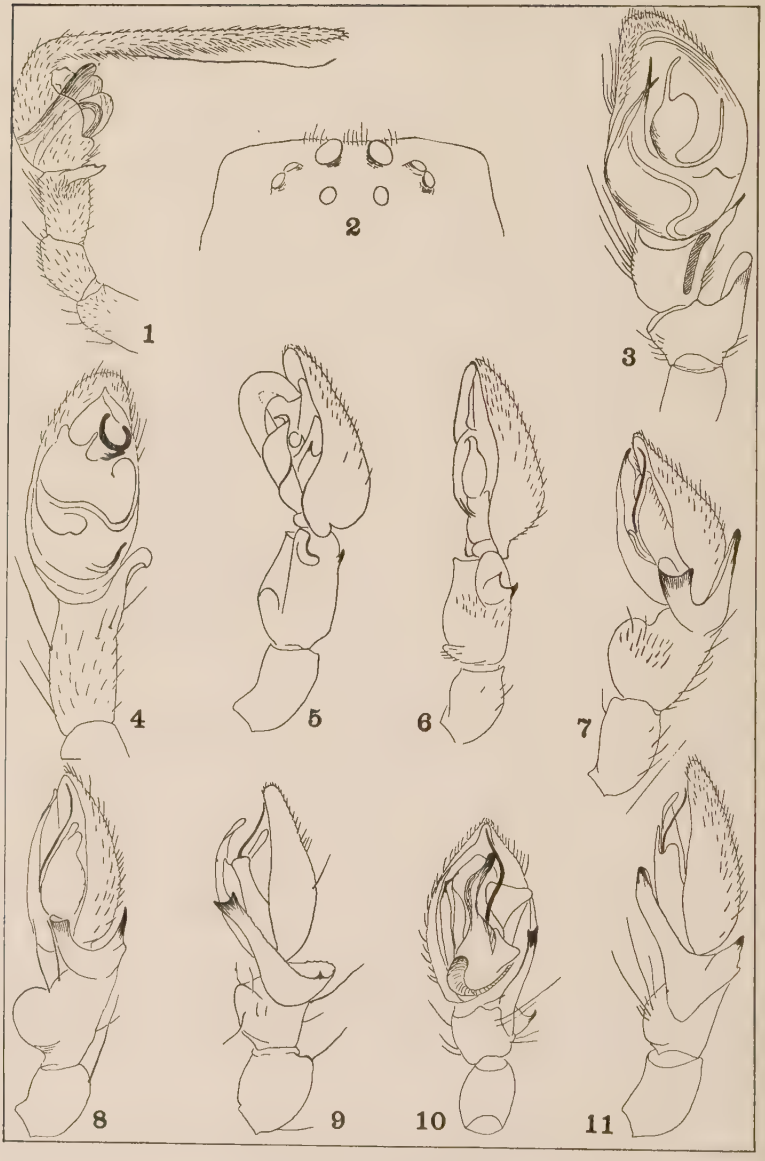
Fig. 33. *Anyphæna coloradensis* sp. n. third left leg.

Fig. 34. *Aysha velox* (Becker) epigynum.

Fig. 35. *Anyphæna aperta* (Banks) epigynum.

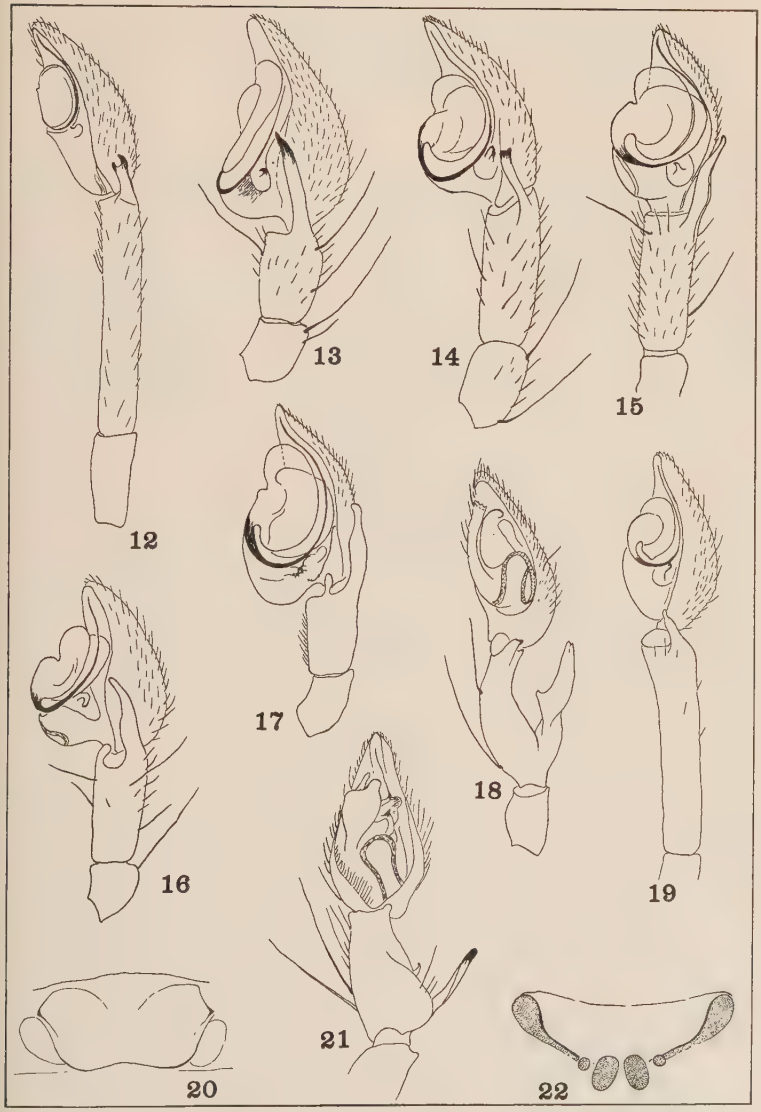
Fig. 36. *Anyphæna pacifica* (Banks) epigynum.

Psyche, 1931 Vol. 38, Plate 6



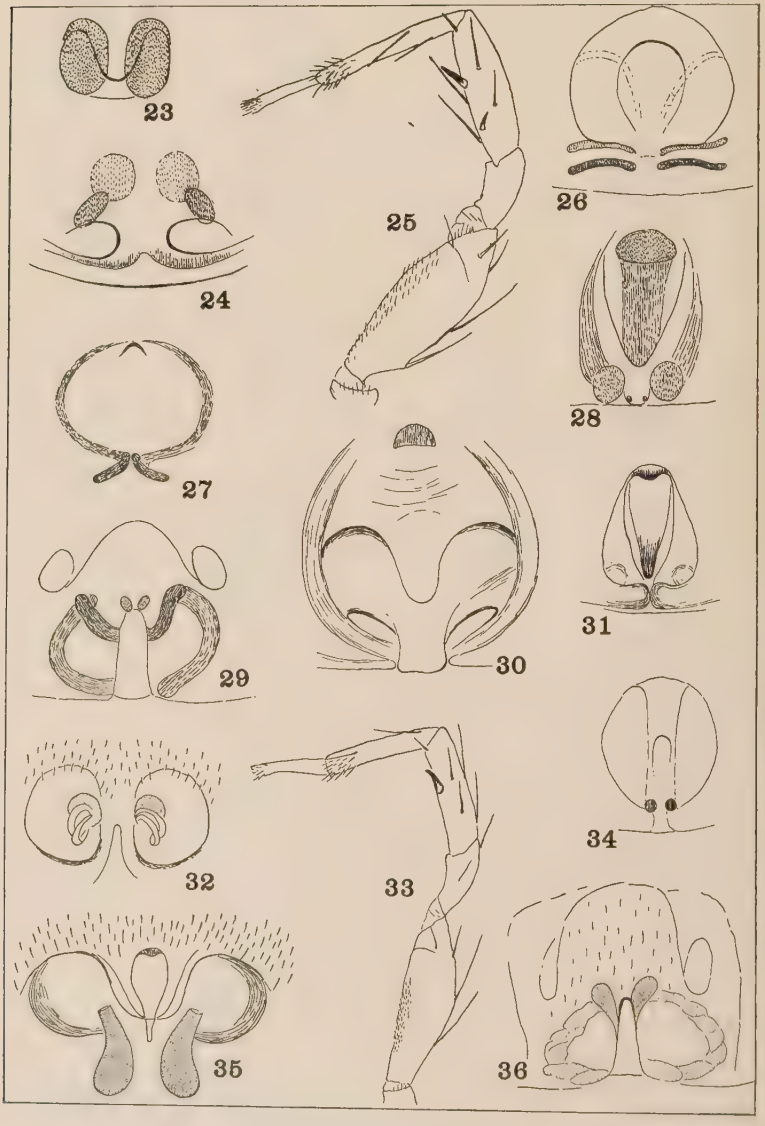
Bryant, Anyphæninæ

Psyche, 1931 Vol. 38, Plate 7



Bryant, Anyphæninæ

Psyche, 1931 Vol. 38, Plate 8



Bryant, Anyphæninæ

BOOK NOTICE

GUIDE TO THE STUDY OF THE WINGS OF INSECTS WITH SUGGESTIONS FOR THE INSTRUCTOR. By Professor J. C. Bradley. Daw, Illston & Co., 1931. 41 + 17 pages, 68 plates.

In recent years the venation of the wings of insects has come to play a large part in the classification of these invertebrates and in our understanding of their phylogeny. This use of the venation has been made possible largely by the application of a uniform terminology to the veins in the wings of all insects. A knowledge of the venation has consequently become an essential although troublesome part of the program of the entomological student. Professor Bradley's guide is designed to aid the student in his attempt to decipher the venation in the various orders and to understand the main lines of evolution along which the wings have advanced. The guide itself consists of a discussion of the general characteristics of the wings and the important features of the venation in the orders and certain representative families. The 68 plates, which are loose in an envelope, include drawings of 67 species belonging to 13 orders; the figures are printed faintly, so that the student can ink the veins as he studies the wings in the laboratory. The booklet of suggestions for the instructor consists mainly of an explanation of the more difficult and perplexing features of the wings illustrated.

The venational interpretation used in the guide is essentially that of Comstock and Needham, whose investigations over 30 years ago were responsible for the system of uniform terminology now in general use. Professor Bradley has modified the portions of that system which have been shown by subsequent research to be incorrect: the radial sector of the Odonata is interpreted in accordance with the conclusions of Lameere, Martynov, and Tillyard; the cubitus and anal veins in the Neuroptera, which Comstock and Needham confused, have been correctly determined; and the interpretation of several details in the venation of the

Diptera has been changed as a result of Alexander's investigations. Professor Bradley has not accepted, however, the identification of Cu2 made by several recent workers (Tillyard, Martynov, Imms). The author maintains that Comstock and Needham originally designated as 1A the vein which these investigators call Cu2 and that the original name (1A) should be retained. If it be true that the vein was independent of Cu1 in the ancient insects, then the terminology of Comstock and Needham should of course be used. But if the vein arises from the stem of Cu1 and is therefore a part of the cubital system, I believe it should be designated the *posterior cubitus* (CuP), as suggested by Martynov. Unfortunately, our knowledge of the convexity and concavity of the veins in the Paleozoic insects is very meagre, most of the insects of that horizon having been described before the significance of that aspect of the wing was realized; but I believe that what little evidence is at hand points definitely to the conclusion that 1A (of Comstock) originally arose from the stem of the cubitus.

F. M. Carpenter.

PIN-LABELS IN MULTIPLES OF 1000, ALIKE

One Dollar Per Thousand

Smallest Type. Pure White Ledger Paper. Not over 4 Lines nor 30 Characters (13 to a line) Additional Characters, 3 cents each, in total and per line, per 1000. Trimmed so one cut makes a label.

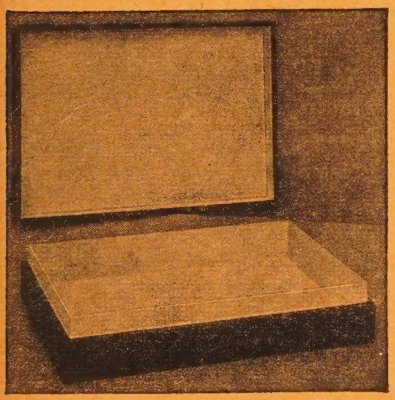
C. V. BLACKBURN, 7 Emerson St., STONEHAM 80, MASS

CAMBRIDGE ENTOMOLOGICAL CLUB

A regular meeting of the Club is held on the second Tuesday of each month (July, August and September excepted) at 7.45 p. m. in Room J, basement of the Peabody Museum, Divinity Ave., Cambridge. Entomologists visiting Boston are cordially invited to attend.

WARD'S NATURAL SCIENCE ESTABLISHMENT,
Incorporated,

P. O. Box 24, Beechwood Station, Rochester, N. Y.



We can now offer:

The Hood Insect Box, designed by Prof. J. Douglas Hood of the University of Rochester. This is a strong, tight box, measuring 12-3/4 x 8-3/4 x 2-3/4 inches, moderately priced, only $12.00 per dozen; single boxes, $1.25 each.

The Hood Insect Net, strongly constructed and dependable, with no soldered joints. The price of this, complete with Bruxelles bag and handle, is $1.60.

We also make the *only genuine Schmitt insect box* and the *American Entomological Co. insect pins.*

Write for catalogue No. 43 of Entomological Supplies.

THE FRANK A. WARD FOUNDATION OF NATURAL SCIENCE

of the University of Rochester

A MANUAL OF THE GENERA OF BEETLES OF AMERICA NORTH OF MEXICO. Keys to the genera and higher groups of Coleoptera, with a taxonomic list of genera. By J. Chester Bradley, Professor of Entomology in Cornell University. *Limited edition. Lithoprinted. xvi, 360 p. Buckram $6.00. Pressboard $5.00.* DAW, ILLSTON & Co., 526-E W. Clinton St., Ithaca, N. Y.

BACK VOLUMES OF PSYCHE

The Cambridge Entomological Club is able to offer for sale the following volumes of Psyche. Those not mentioned are entirely out of print.

Volumes 2, 3, 4, 5, 6, 7, 8, 9, 10; each covering a period of three years, $5.00 each.

Volumes 12, 14, 15, 17, each covering a single year, $1.00 each.

Volumes 18, 19, 20, 21, 22, 23, 24, 25, 26, each covering a single year, $1.50 each.

Volumes 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, each covering a single year, $2.00.

Orders for 2 or more volumes are subject to a discount of 10%.

Orders for 10 or more volumes subject to a discount of 20%.

A set of all the volumes available (33 in all) will be sold for $65.00.

All orders should be addressed to

F. M. CARPENTER, Associate Editor of Psyche,
Museum of Comparative Zoölogy,
Department of Entomology,
Cambridge, Mass.